2nd FAO/WHO

GLOBAL FORUM OF FOOD SAFETY REGULATORS

12–14 OCTOBER 2004
BANGKOK, THAILAND

Building effective food safety systems

PROCEEDINGS OF THE FORUM

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FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
WORLD HEALTH ORGANIZATION
Rome, 2005

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FOREWORD

The 1996 World Food Summit Rome Declaration reaffirms the right of everyone to have access to safe and nutritious food, consistent with the right to adequate food and the fundamental right of everyone to be free from hunger. The World Food Summit Plan of Action recognises that: "Food security exists when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life". Ensuring the quality and safety of food is therefore an essential consideration in any food security programme.

The Fifty-third World Health Assembly (May 2000) adopted a resolution calling upon WHO and its Member States to recognise food safety as an essential public health function, with the goal of developing sustainable, integrated food-safety systems for the reduction of health risk along the entire food chain. The resolution also asked WHO to encourage evidence-based strategies for the control of food-borne diseases and to provide guidance in prioritizing such strategies.

FAO has always given high priority to programmes and activities dealing with food quality, safety and consumer protection. WHO has also had a continuing commitment to the fundamental principle that ensuring food safety is an essential activity and an integral part of any public health programme.

On many occasions, FAO and WHO Member Countries expressed their desire for fora to be held, outside the existing negotiation meetings, where they could exchange information and experiences on food safety issues that are of national and trans-national importance.

The Communiqués of the Okinawa (2000) and Genoa (2001) G-8 Summits encouraged FAO and WHO to organize periodic international meetings of food safety regulators to advance the process of science-based public consultations. Following the successful First FAO/WHO Global Forum of Food Safety Regulators held in Marrakesh, Morocco, in January 2002, under the general theme of "*Improving Efficiency and Transparency in Food Safety Systems – Sharing Experiences*", FAO and WHO convened the Second Global Forum of Food Safety Regulators in Bangkok, Thailand, from 12 to 14 October 2004, with *Building effective food safety systems* as the main theme. The Forum was most generously hosted by the Government of the Kingdom of Thailand and was supported by the Governments of Canada, Finland, France, Germany, Italy, Japan, Norway, United Kingdom, United States of America and the European Commission. It provided the opportunity for food safety regulators from all parts of the world to meet together outside the usual negotiating circles to exchange information and experiences on important food safety issues and promote partnerships and cooperation among all food safety regulators and stakeholders for the benefit of safer food for all.

TABLE OF CONTENTS

Page

INTRODUCTION 1
ADOPTION OF THE PROVISIONAL AGENDA 1
KEYNOTE ADDRESSES 2

STRENGTHENING OFFICIAL FOOD SAFETY CONTROL SERVICES

Defining the responsibilities and tasks of different stakeholders within the framework of a national strategy 3
Legal basis for food safety official and non-official control 4
Training personnel of official food safety control services 5
How official services foster and enforce the implementation of HACCP by industry and trade 6
Food Import/Export Control and Certification 7
EPIDEMIOLOGICAL SURVEILLANCE OF FOOD-BORNE DISEASES (fbd) AND FOOD SAFETY RAPID ALERT SYSTEMS 8
Food Contamination Monitoring and Food-borne Disease Surveillance at National Level 10
International Cooperation on Food Contamination and Food-borne Disease Surveillance 10
Dealing with emerging risks related to the environment and new technologies 11
Prevention and response to intentional contamination 12
WORKSHOP 1: PARTNERSHIPS ON STRENGTHENING OFFICIAL FOOD SAFETY CONTROL SERVICES 13
WORKSHOP 2: PARTNERSHIPS ON EPIDEMIO-SURVEILLANCE OF FOOD BORNE DISEASES AND FOOD SAFETY RAPID ALERT SYSTEMS 15
CONCLUDING SESSION 16

LIST OF ANNEX AND APPENDICES

ANNEX I 18
APPENDIX I LIST OF PARTICIPANTS 21
APPENDIX II Welcome speech by Mr Apichart Pongsrihadulchai, National Bureau of Agricultural Commodity and Food Standards 59
APPENDIX III Opening remarks by Dr Kerstin Leitner, WHO 61
APPENDIX IV Opening speech by Mr H. de Haen, FAO 63
APPENDIX V Opening address of H.E. Chaturon Chaisang, Deputy Prime Minister of Thailand 65
APPENDIX VI Provisional Agenda 67
APPENDIX VII Keynote address by Mr R. Fadden, Canadian Food Inspection Agency 71
APPENDIX VIII Keynote address by Mr S. Slorach, Chairperson of the Codex Alimentarius Commission 75
APPENDIX IX Working papers of the Second Global Forum of Food Safety Regulators 79
APPENDIX X List of Conference Room Documents 219
APPENDIX XI Summaries of GF-2 Side Events 228

INTRODUCTION (Agenda Item 1)

1. The Second Global Forum of Food Safety Regulators (GF-2) provided an opportunity for food safety regulatory officials from 90 countries to exchange experiences and also discuss actions to improve collaboration on food safety. The Forum was also attended by 10 international governmental and non-governmental organizations and observers having an interest in food safety matters. The list of all participants is attached as Appendix I.

2. Mr Apichart Pongsrihadulchai, Secretary-General, National Bureau of Agricultural Commodity and Food Standards of Thailand extended a most cordial and warm welcome to the participants. He expressed his hope that GF-2 would create better and closer relationships between countries (Appendix II).

3. Ms Kerstin Leitner, Assistant Director-General, Sustainable Development and Healthy Environments, World Health Organization (WHO) welcomed the participants and thanked the Government of the Kingdom of Thailand for hosting GF-2 and the donor countries for their financial support. She reminded delegates of the high incidence of food-borne diseases in both developed and developing countries and their impact on public health systems and economic productivity. The speaker acknowledged that national food safety systems are increasingly utilizing a food chain approach to address food safety issues. She also mentioned several major initiatives in which WHO was involved, together with FAO and other international organizations, such as the Standards and Trade Development Facility (STDF) and the International Food Safety Authorities Network (INFOSAN) (Appendix III).

4. Mr Hartwig de Haen, Assistant Director-General, Economic and Social Department, Food and Agriculture Organization of the United Nations (FAO) highlighted the importance of the adoption of internationally agreed standards. He underlined that the resulting increase in cost of compliance required a great deal of capacity building and that in order to meet these demands, FAO has been involved in a variety of initiatives. These included the International Portal on Food Safety, Animal and Plant Health, the STDF and, often in cooperation with WHO, the organization of regional food safety conferences and the provision of tools and guidelines. He emphasized that the holistic food chain approach was the most effective way to address food safety problems (Appendix IV).

5. The Forum was opened by H.E. Chaturon Chaisang, Deputy Prime Minister of the Kingdom of Thailand. He referred to the First Global Forum of Food Safety Regulators (Marrakesh, Morocco, 2002) and the FAO/WHO Regional Conferences on Food Safety for Europe and for Asia and the Pacific. He indicated that Thailand's initiative to host GF-2 was reflective of the Government's emphasis on food safety, as 2004 had been named "Food Safety Year" in Thailand. He then drew the attention of the participants to some key issues and underlined that a strong political commitment was needed to implement a clear and effective national strategy (Appendix V).

ADOPTION OF THE PROVISIONAL AGENDA (Agenda Item 2)

6. The Forum elected Mr Apichart Pongsrihadulchai, Secretary-General, Thai National Bureau of Agricultural Commodity and Food Standards, and Mr Pakdee Pothisiri, Secretary-General, Thai Food and Drug Administration, as co-Chairmen. The Forum further elected Mr Steve Hathaway of New Zealand and Mr Alex Seremula of the Republic of South Africa as co-Vice Chairpersons.

7. Mr Pongsrihadulchai formally opened the Forum and the participants adopted the Provisional Agenda of the Forum (Appendix VI). He drew the participants' attention to the Concept Paper, emphasizing that the Global Forum was not intended to lead to recommendations, but rather to a clarification of issues and that the Forum Proceedings would summarize the main issues discussed.

KEYNOTE ADDRESSES (Agenda Item 3)

8. Mr Richard Fadden, President of the Canadian Food Inspection Agency, presented the first keynote address on *Building effective food safety systems: application of risk analysis* (Appendix VII). Mr Fadden recalled the current and future challenges to food safety and globalization. He outlined that the Canadian response to these challenges was based on the risk analysis approach developed by Codex, dividing responsibilities between Health Canada and the Canadian Food Inspection Agency. Mr Fadden stressed the importance of collaboration between federal, provincial/territorial authorities and all stakeholders in the food system and the importance of a strong governmental role in ensuring the safety of the food supply. Citing the example of the recent discovery of a BSE case, he demonstrated the Canadian risk analysis approach including a new risk assessment for food safety and animal health and regular communication with stakeholders and foreign governments.

9. Mr Stuart Alexander Slorach, Acting Director-General of the National Food Administration in Sweden and Chairman of the Codex Alimentarius Commission (CAC) presented the second keynote address on the *Complementarity between CAC normative work and the Global Fora* (Appendix VIII). He recalled the different kinds of texts elaborated by Codex, namely standards, guidelines and codes of practices. The speaker noted that while the Global Fora focus on information exchange and experience sharing, Codex activities consist mainly of normative work, but also include the exchange of information and promotion of capacity building. Hence, such Global Fora should facilitate consensus building in Codex negotiations. It was noted that both the SPS and TBT Agreements refer to international standard setting bodies with Codex being the main player in the food area. He suggested some questions for discussion concerning the areas respectively covered by Codex and the Global Fora as well as the way they can help developing countries to build effective food safety systems. Finally, he urged the participants to participate actively in the Forum discussions.

10. In order to focus the Forum discussions under the main theme of *Building Effective Food Safety Systems*, two sub-themes had been identified to meet the needs expressed by developing and developed countries, including: *Strengthening Official Food Safety Control Services* and *Epidemio-surveillance of Food-borne Diseases and Food Safety Rapid Alert Systems*. Under each sub-theme, some specific areas of concern were further discussed, all of which were introduced by working documents presented by food safety experts and further discussed in plenary.

11. Two workshops, one for each sub-theme, were organized to identify and promote partnerships in these fields based on the discussions in plenary and relevant Conference Room Documents provided by countries and international organizations.

STRENGTHENING OFFICIAL FOOD SAFETY CONTROL SERVICES (Agenda Item 4)

12. The theme paper, presented by Mr Paul Merlin on behalf of the Joint FAO/WHO Secretariat of the Forum (the Secretariat), described the different elements of a national food control system and discussed three possible types of organizational structures for national food control systems, namely a multiple agency, single agency and integrated systems.

13. He then presented key management elements of food safety control services that would improve their effectiveness, including task definition and harmonization, effective supporting legislation and crisis preparedness. Finally, specific issues of developing countries for which technical assistance would be useful were raised, such as weak basic infrastructure, a fragmented food processing industry, dual standards for export and domestic markets and a lack of resources for official services.

Follow-up Discussion:

14. Several delegations from developing countries re-iterated that continued technical assistance was needed to improve their food safety systems and thanked FAO and WHO for their past support. The importance of strengthening national food control systems to address the needs of the domestic consumer, rather than only to improve food exports, was noted.

15. Other specific concerns raised regarding aspects of food safety control services are included in the discussion portion of the relevant section of these Proceedings.

Defining the responsibilities and tasks of different stakeholders within the framework of a national strategy (Agenda Item 4.1)

16. The topic paper presented by Mr Alan Reilly, Deputy Chief Executive of the Food Safety Authority of Ireland, outlined the importance of sharing the responsibility for food safety among all stakeholders involved in the production and marketing of foods, in light of decreased consumer confidence in food safety. It was emphasized that while government and regulatory agencies must work to ensure that consumer's health and interests are adequately protected, consumers must also play a role in ensuring the safety of the food they consume.

17. The speaker noted that effective food control at the national level can be undermined by the existence of fragmented legislation, multiple jurisdictions, and inconsistencies in enforcement and weaknesses in food surveillance and monitoring. Responsibilities should be shared by national governments, farmers, food processors and manufacturers, food retailers, caterers and consumers.

18. The speaker emphasized that the development of effective national multi-disciplinary, inter-agency networks utilizing the food chain approach can be hampered by disagreements regarding areas of competence of national authorities.

Follow-up Discussion

19. Several delegations noted the importance of the involvement of all stakeholders, including consumers and industry, in effective national integrated food safety systems and informed the Forum of various actions taken by governmental authorities and international agencies to engage these groups in food safety matters.

20. The following points emerged from the discussion:

- Countries must address consumer interests and enable consumer participation, both in training and in decision making activities, in the development or re-organization and implementation of national food safety systems.
- It is important to gain political commitment to ensure food safety along the entire food chain. This can be achieved by establishing high level food safety advisory bodies.

- National and sub-national interaction and coordination is important in the implementation of a national food safety strategy.
- When countries are able to develop and implement effective and comprehensive national food safety strategies, the regional or international sharing of these policies with other food safety regulators allows countries to better garner the political will to advance food safety.
- Educating and involving farmers in the production of safe food is also important.
- Consumers should be educated in hygienic handling and proper cooking of food, as well as in the importance of making wise nutritive food choices to protect their own and their family's health. Proper food labelling can also assist in protecting consumer health, both in the areas of food safety and nutrition. The current global epidemic of obesity requires interventions by all stakeholders to promote healthy lifestyles and healthy diets.

21. The participants were informed that the WHO Five Keys to Food Safety are an example of a source of the basic information the consumer needs to protect themselves and their families from food safety outbreaks.

Legal basis for food safety official and non-official control (Agenda Item 4.2)

22. Mr Alex Seremula, Deputy Director of the Department of Agriculture in the Republic of South Africa outlined the legislative framework that governs food safety control in that country. The speaker gave a detailed account of the various departments involved in food safety, their respective roles and mandates, as well as the relevant private sector food quality assurance and certification schemes operating in that country. He explained that despite the complexity of the system and the large number of players involved, its coordinated implementation is still able to ensure food safety from farm to fork.

23. He noted the value of the co-existence of private sector standards, such as ISO standards, with official standards. He emphasized that countries cannot base their arguments in international trade disputes on these private standards, but need to utilize officially recognized standards.

24. The delegate of the Netherlands highlighted the legal basis of the food safety system of the European Union. In the past decades, legislation in the field of food safety has been largely harmonized across the EU, which has led to uniformity of requirements for countries exporting to the EU Member States. The speaker noted that emergencies related to food and food production that have occurred in the past 15 years have urged the European Union to strengthen their food safety systems in order to protect consumers. These hazards comprise food-borne diseases, zoonoses, residues of unwanted substances in food and dangerous animal diseases.

25. The EU "White paper on food safety" establishes the current food safety policy in the European Union and is based on the risk analysis approach. In this framework, the EU General Food Law of 2002 has led to the establishment of the European Food Safety Authority and several legal measures to be enforced by the Member States. Some of the key elements are 1) the responsibility of producers for safe food and 2) the task of the Government to check that this responsibility is adequately met. It was noted that traceability throughout the entire food production chain is also an important tool to strengthen consumer confidence.

26. The speaker highlighted the challenge of developing a more holistic approach to dealing with food risks by comparing different risks while retaining optimal consumer protection. It was noted that a balance should be found between dealing with microbiological risks and risks of chemical residues. The speaker emphasized that food safety requirements in the European Union are the same for local producers as for countries exporting to the EU Member States.

27. The speaker emphasized that industrialized countries must be aware of the constraints of developing countries in exporting to industrialized countries as developing countries do not always have adequate production and control facilities to comply with international or EU food safety standards. Accordingly, technical assistance, capacity building and partnerships are important instruments to support countries with specific needs.

Follow-up Discussion

28. Several delegations informed of actions taken recently to strengthen and streamline their food control services, including identification of the role of the various agencies involved, as well as the coordinating mechanisms established to reduce duplications and eliminate gaps. They noted that developing countries face serious difficulties because of the lack of resources, physical as well as human, necessary to carry out the relevant food control tasks. They stressed the need for an aggressive strategy in favour of consumer awareness so that consumers can play a proactive role in fostering improvement in food control services.

29. The following points emerged from the discussion:

- Private standards such as the EUROPGAP scheme, introduced by retailers, are often stricter than EU or Codex standards, and could therefore act as a technical barrier to trade;
- Partnerships between food control agencies in developed and developing countries help reduce the differences in food legislation;
- The application of the principle of "as safe as possible" and that of "as safe as necessary", as a basis for food safety decisions, reflect different philosophies in the expression of the appropriate level of protection;
- Food exports, including food aid, to countries which do not have the capacity to control their quality and safety need to be in conformity with the regulations of the exporting country.

30. The participants noted the need to conduct an analysis of the food safety situation in African countries and to use such an analysis to assess their needs in capacity building and technical assistance. They were informed of an FAO and WHO plan to carry out this analysis in connection with the joint Regional Conference on Food Safety for Africa, scheduled to take place in 2005.

Training personnel of official food safety control services (Agenda Item 4.3)

31. Mrs Claire Gaudot, Scientific Adviser of the Permanent Representation of France to FAO outlined the training of official food safety control services personnel. She began by reviewing the context in which official control services operate, with rapid and significant changes that call for constant adjustment in the ability of food safety control personnel.

32. The speaker emphasized the importance of distinguishing the three types of training: pre-recruitment training, which should cover the full range of ability required at recruitment, post-recruitment occupational training given before taking up duties and staff development or further training. Training needs should be defined through multi-factor analysis of the context in which control personnel operate.

33. It was noted that training is an essential tool for building the capacity of control authorities and for managing human resources. It requires a specific policy and proper resources. The speaker noted that the organization of a national or regional training mechanism needs to reflect the mandates and responsibilities of official control services. The training programme should cover

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all aspects relating to the activity of official food safety control service personnel, including knowledge, experience and self-management skills.

Follow-up Discussion

34. The discussants stressed the strategic value of training for implementing effective food safety control systems and criticized the lack of resources made available by governments. Several delegations noted that the absence of local expertise meant that training had to be sought outside the national context, incurring high costs and limiting resources for local experts. The delegations called for the support, especially from FAO and WHO, of initiatives to develop training opportunities, including basic training, for food safety control personnel. It was also stressed that the growing focus on shared responsibility needed to be accompanied by the training of producers and consumers through their respective associations, in order to help them to shoulder their new responsibilities.

35. The representative of the European Commission informed the Forum of the proposal to set up a European training centre for official food safety control officials. This centre was to be run by the Food and Veterinary Office based in Dublin, Ireland, and would be open to inspectors from EU Member States as well as those from developing countries exporting to the Community (3000 trainees scheduled for 2006). The representative of the IAEA drew attention to Conference Room Document 22 on activities in food safety training proposed by the Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture.

How official services foster and enforce the implementation of HACCP by industry and trade (Agenda Item 4.4)

36. Ms Sirilak Suwanrangsi, Minister Counsellor, Royal Thai Embassy, Tokyo, Japan, presented the principles governing the role of governmental agencies in the implementation of HACCP by the private sector using examples from the Thai experiences in this area. She emphasized the vital role the Government has in supporting HACCP implementation through cooperation of all sectors in the food chain including industry associations, academia, individual processors and producers, suppliers of raw materials, exporters and importers. Government agencies have strategic roles in the implementation of HACCP as well as operative roles on assessment of effectiveness and compliance.

37. She also noted that, in fostering HACCP implementation, it is vital that governments have sufficient capabilities to perform the tasks. Governments should allocate resources and when necessary, reorganize the works and work forces to support the industry. HACCP generic models, hazard identification and control guides could be provided to enhance the development and to ensure uniformity and scientific integrity. Schemes for recognition of the HACCP system, such as audit and certification, would enhance effective implementation and market access.

38. She added that HACCP is one risk management tool. HACCP alone cannot resolve food safety problems, and should be complemented by other control measures such as monitoring programmes at primary production for agriculture chemicals, pollutants, contaminants and natural toxin, traceability and labelling.

39. She concluded by noting that the HACCP programme should be kept simple and based on science and international standards. Countries should share experiences and collaborate in training. FAO and WHO can assist in training and make available relevant information. Assistance to small scale entrepreneurs and the lesser experienced countries should be focused.

Follow-up Discussion:

40. Several delegations described similar positive experiences in governmental support to HACCP implementation. There was general agreement that small scale producers have particular needs in terms of HACCP implementation due to the often limited human resources available in these enterprises. Difficulties in conducting proper hazard analysis, as well as auditing were mentioned as other areas of concern.

41. Several delegates thanked the international organizations for their support in introducing HACCP in their country and urged countries with a long experience in HACCP to support them by sharing their experiences.

42. There was discussion about the use of certification schemes with a general agreement that these are mostly used for market access and provide only one piece of evidence that a proper and efficient system is in place.

43. The representative of the FAO Secretariat announced the current development of an FAO/WHO guidance document to support HACCP implementation in small scale businesses and suggested to the delegates, in particular from developing countries, to participate in its elaboration by taking part in the E-forum organized by FAO for this purpose.

Food Import/Export Control and Certification (Agenda Item 4.5)

44. The presentation by Ms Karen Stuck, Assistant Administrator of the Food Safety Inspection Service, United States of America focused on the purpose of import controls, principles for designing an import control programme and the tools available for carrying out import control programmes.

45. The speaker noted that the SPS Agreement permits countries to establish their own level of protection provided the standards are based on science, applied consistently and are transparent. The speaker outlined the tools available for import control programmes which include equivalence determination, audits, port-of-entry inspections, automated systems to facilitate rapid clearance and statistically-based random sampling.

46. A paper on Food Export Control and Certification was presented by Ms Shashi Sareen, Director, Export Inspection Council of India. The speaker noted that while most governments focus on import systems only, food export control and certification such as that implemented by India plays an important role in assuring food safety and quality.

47. Advantages of the food export certification include reduction of the time required to test food imports, minimization of import rejection, decreased duplication, cost effectiveness, reduced variation of food products, and improvement of the exporting country's image. India has developed rules for export certification and implements these rules for several commodities. Ms Sareen outlined the challenges faced by developing countries when exporting to major importing markets and made suggestions on actions needed to overcome them.

48. Mr Henri Belvèze, Deputy Head of Unit, European Commission, presented Conference Room Document 28 on *Practical considerations of the operation of the EU import/export controls.*

49. As part of its gradual integration, the European Community has enacted detailed legislation for the control of foods imported from third countries. Regulations on the import of

products of animal origin were the first to be put in place, covering aspects relating to public health and animal health. They place primary responsibility for inspection and certification on the competent authorities of the exporting country, in follow-up to an evaluation mission of the Commission's Food and Veterinary Office (FVO). With the exception of plant health regulations applying to selected fruits and vegetables, import regulations for foodstuffs of non-animal origin are at a less advanced stage of Community harmonization. However, on 1 January 2006, new regulations will be introduced that will reinforce the integration of the food import control system and reduce the area of competence remaining under national legislations.

50. The speaker noted that controls envisaged in community legislation are made by the inspection services of the Member States under the supervision of the FVO. They can take place at the border or at destination, depending on the foods imported. The nature and frequency of actual material controls, basically in laboratory analysis, are determined by the level of risk and the results of previous controls of products of the same origin. The special needs of developing countries, if they are to adapt to the new conditions of 2006, will be taken into account by the Commission, especially as regards time frames, training and technical assistance.

Follow up Discussion

51. Several countries commented that while the WTO allows for a determination of equivalence, this concept is often difficult to implement. It was pointed out that a standard coding system and common language would facilitate food trade and import assurances. Several delegates commented that Codex standards should be expanded to cover all food safety needs (e.g., limits on microbiological contamination) and be more detailed. Also, the issue of food quality should be given due consideration as a large proportion of food import rejections are caused by quality deficiencies.

52. It was noted that food safety authorities should also be held to a standard of performance as a consistent standard of performance for food agencies will increase trust and confidence in the safety of exported products. Other delegates noted that infrastructure development in countries would contribute to facilitating food trade. Some delegations emphasized the moral and humanitarian responsibility of countries, especially those which food may be transported through, to assist in coordinating and monitoring of the safety of food imports in order to protect consumers in a country where the food safety programmes have been disturbed due to a major crisis.

EPIDEMIOLOGICAL SURVEILLANCE OF FOOD-BORNE DISEASES (fbd) AND FOOD SAFETY RAPID ALERT SYSTEMS (Agenda Item 5)

53. The theme paper, presented by Dr Peter Karim Ben Embarek on behalf of the Secretariat, argued that due to the globalization of the food supply and the fbd, there is a need for global fbd surveillance. Such global surveillance networks must be based on data generated and shared from national surveillance systems. He highlighted that the objectives of surveillance are to inform response systems, allow informed interventions, and provide a basis for efficient risk based strategies to lower the burden of disease.

54. It was emphasized that the vast challenges in implementing global food-borne disease surveillance and food safety rapid alert systems, including the large variety in countries' capacity to detect, investigate and mitigate food-borne diseases, necessitate international cooperation and assistance. The speaker then described the role of international organizations such as FAO and WHO in developing such networks.

55. The speaker outlined the International Health Regulations (IHR), which now cover only three diseases (cholera, plague and yellow fewer) and are undergoing revision to include all events of international public health importance. These events include infectious and non-infectious diseases and unacceptable level of micro organisms, toxins and chemicals in foods. The revised IHR will also provide guidelines for implementing surveillance systems. In addition to these and other international requirements, such as the WTO SPS Agreement, the speaker then briefly noted the ongoing integration of existing and new surveillance, alert and response systems in FAO and WHO. For example:

- Global Alert and Response System
- Global Outbreak Alert and Response Network
- Global Public Health Information Network
- Global Chemical Incident Alert and Response System
- Global Salmonella Surveillance system
- INFOSAN

56. The presentation was followed by a live video conference on INFOSAN moderated by Dr Kerstin Leitner, WHO, with food safety authorities from Australia, Canada, Jordan, Spain, Uganda and the USA and Mr Mike Ryan, Director of Alert and Response Operations, WHO, Geneva.

57. INFOSAN (the International Food Safety Authorities Network) will serve as a vehicle for food safety authorities and other agencies involved in food safety to share information and experiences. INFOSAN Emergency, embedded in this network, will link official national contact points to address outbreaks and emergencies of international importance.

58. The video conference served to 1) highlight the important aspects of INFOSAN related to food-borne disease surveillance; 2) demonstrate the potential for real-time discussion between food safety regulators; and 3) show the importance of interaction between surveillance personnel and food safety regulators.

Follow-up Discussion:

59. The participants congratulated WHO and FAO on this initiative and requested more information on becoming a member of INFOSAN. The Secretariat noted that countries may have numerous focal points based on the number of relevant agencies in those countries. However, for sake of efficiency, there will only be one officially designated INFOSAN emergency contact in each country.

60. Information on registration with INFOSAN is available from the following internet site: http://www.who.int/foodsafety, or E-mail address: foodsafety@who.int.

61. Some delegates noted several areas where FAO/WHO could take the lead role in guiding member countries at the regional level including: 1) strengthening capacity for surveillance and response of food-borne diseases through networking; 2) harmonizing the various systems of food-borne diseases surveillance; 3) enhancing surveillance along the entire feed food chain including risk analysis and 4) providing assistance in training and capacity building programmes for development of technical expertise.

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Food Contamination Monitoring and Food-borne Disease Surveillance at National Level (Agenda Item 5.1)

62. The topic paper was presented by Dr Danilo Lo Fo Wong, Danish Zoonosis Centre. He outlined the general purpose of food-borne diseases surveillance: to establish a baseline, to measure the burden of food-borne diseases, to monitor trends and patterns in endemic diseases, to detect and investigate outbreaks, to initialize targeted action, to evaluate interventions and help prioritize efforts and resources. Surveillance is a prerequisite for qualified feedback to stakeholders. He further described the different types of surveillance systems. These can be passive or active, syndromic or laboratory based, general or sentinel, continuous or intermittent, disjointed or integrated. In general, the intensity of surveillance is dependent on social, practical and financial parameters. He illustrated these principles by describing the Danish national integrated *salmonella* surveillance model. The successful implementation of this system can be accredited to the close cooperation between the public and private sector and between medical and veterinary epidemiologists and microbiologists. The system is based on integration of data from animals, food and humans, enabling the attribution of human cases of salmonellosis to specific foods through genetic finger-printing of relevant strains from all three sectors. Similar typing systems are being developed for other important food-borne pathogens.

Follow up Discussion

63. Delegates commended Denmark for its achievements in developing such an efficient system. However, several delegates noted the high cost of such a surveillance system and expressed the need for support to developing countries to establish food-borne disease surveillance systems. Other delegates referred to similar systems to the one presented by the speaker. In some instances, it was noted that having access to industry data was a major difficulty. It was stated that the system could not be used to evaluate transmission of pathogens from humans to animals.

64. To those who were concerned about the cost of the Danish system, the speaker, while acknowledging the high cost of the system, argued that other less costly surveillance systems, based on the same principles could be - and were being - established also in developing countries. Their level of sophistication would then match available resources. More than necessarily looking for new resources, the real issue was to use existing resources to focus testing strategically in relevant sectors and then ensure central compilation of data. Some of the developing countries participating in the Global WHO Salm-Surv Network were starting to move in this direction.

International Cooperation on Food Contamination Monitoring and Food-borne Disease Surveillance (Agenda Item 5.2)

65. The topic paper on international cooperation on food contamination monitoring and food-borne disease surveillance was presented by Mr Robert Brackett, Director of the Center of Food Safety and Applied Nutrition at the US Food and Drug Administration. The speaker pointed out that over the past two decades, the food supply has become truly global. With the globalization of the food supply, food-borne illness has become a global issue that demands international cooperation to address food contamination.

66. The speaker stated that surveillance data, integrated with and compared to epidemiological data, allows for more rapid detection of food-borne illness and trace back to identify implicated lots of food.

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67. The speaker described the robust monitoring and alert system that exists in the United States of America for protecting consumers and suggested that the elements of a successful national monitoring system could be applied internationally. The speaker acknowledged that several regional and international surveillance and alert programmes have been developed to accomplish this goal. He recommended that WHO, together with FAO, serve as the focal point of a global food safety surveillance system.

Follow-up Discussion

68. Several delegates asked questions regarding the need for active surveillance and establishing priorities on what should be monitored. The speaker explained that passive surveillance systems do not give an accurate measure of the true burden of food-borne disease and that food-borne disease surveillance systems should target the largest public health problems.

69. The speaker encouraged all countries to initiate food-borne surveillance programmes. He cautioned that once surveillance begins, countries may experience the paradox of success, i.e., a successful surveillance programme will find more cases of food-borne disease so it may appear that the problem of food-borne disease is increasing. Finally, the speaker encouraged countries to tailor their risk communication messages to fit the needs of their country.

Dealing with emerging risks related to the environment and new technologies (Agenda Item 5.3)

70. Mr Alexander Haslberger, Professor at the University of Vienna, presented a paper prepared on behalf of the FAO/WHO Secretariat which focused on the possible consequences of emerging technologies used in food production. The speaker noted that evidence has shown that new technologies used in food production often improve food security, but may also result in adverse environmental effects and raise ethical and food safety concerns. In addition to genetic modification (GM), the modern methods cited also include the induction of unspecific mutagenesis and marker directed breeding.

71. The speaker emphasized that the relevant Codex texts, as well as the Cartagena Protocol on Biosafety provide international guidance and regulation for the safety of GM foods and for related environmental safety. He underlined the importance of a thorough molecular characterization of GM organisms, improved models for the assessment of gene flow and further research into subsequent risk management options. The speaker asserted that special attention is needed in the assessment of local agro-ecological conditions influencing the environmental safety of living modified organisms. He also drew attention to the consequences of environmental responses to agricultural practices which may have consequences for human health and development, such as within the food chain. It was emphasized that ethical considerations should also be included when evaluating all the aspects associated with the safety of modern food production technologies, including agro-ecological and socio-economic factors.

Follow-up Discussion:

72. Delegations expressed their views on this topic, with some noting the current initiatives in their country relating to environmental issues and concerns with the safety of food produced by modern technologies. The Chairman of the Codex Alimentarius Commission announced the re-establishment of the Codex Intergovernmental Task Force on Foods Derived from Modern Biotechnology and that the Government of Japan would send out a circular letter to Codex Member countries to solicit priorities for new work for the Task Force. Delegations were encouraged to submit their proposals at that time.

73. The following points emerged from the discussion:

- Genetic modification of organisms can be compared in some ways to the natural evolutionary changes of genes in nature;
- The issue of intellectual property rights related to GM foods must be considered;
- The safety of GM products should be assessed on a case-by-case basis;
- The co-existence of GM and non-GM crops should be minimized;
- Traceability/product tracing, labelling and post-market monitoring of GM foods are important;
- Governments must consider the ethics of testing the safety of GM foods.

74. An observer emphasized the necessary elements of national capacity needed to regulate GM foods, including mandatory environmental assessment, mandatory human safety evaluation, science-based food safety standards, post-market monitoring, mandatory labelling, traceability requirements, stakeholder input from the initial phases and strict liability provisions. The observer noted that many countries lacked some or all of these elements, and as they also have other priorities competing for limited resources for food safety, they must be allowed to prioritize these resources nationally and not be pressured regarding their position on GM foods.

Prevention and response to intentional contamination (Agenda Item 5.4)

75. A paper on intentional contamination of food was presented by Dr Jorgen Schlundt, Director, Food Safety Department, WHO. The speaker noted that while WHO work related to intentional contamination has been ongoing for some time, the importance of these issues has increased since the terrorist attacks on the United States of America in 2001. The malicious contamination of food for terrorist purposes was cited as a real and current threat, and it was noted that deliberate contamination of food at one location could have global public health implications.

76. The Fifty-fifth World Health Assembly in May 2002 requested WHO to provide tools and support to Member States to increase the capacity of national health systems to respond to such events. It was underlined that outbreaks of both unintentional and deliberate food-borne diseases should be managed by the same mechanisms.

77. The speaker asserted that sensible precautions, coupled with strong surveillance and response capacity, constitute the most effective way of countering emergencies, including food terrorism. It was emphasized that consideration of deliberate acts of food sabotage should be incorporated into existing programmes for controlling the production of safe food as the strengthening of such programmes will both increase Member States' capacity to reduce the increasing burden of food-borne illness and help them to address the threat of food terrorism. The speaker highlighted that prevention, although never completely effective, is the first line of defence and that the key to preventing food terrorism is establishment and enhancement of existing food safety management programmes and implementation of reasonable security measures. It was noted that WHO has developed a guidance document on the subject for governments as well as for industry and provides advice on strengthening national systems to respond more efficiently to potential food terrorism. The speaker stated that WHO can also coordinate existing international systems for public health disease surveillance and emergency response, including food terrorism. Finally, the representative from WHO underlined the importance of the new international network, INFOSAN Emergency, aimed at informing Member States and supporting international response in the event of an outbreak.

78. Mr Leslye Fraser, Director, Office of Regulation and Policy at the US FDA Center of Food Safety and Applied Nutrition provided the Forum with an update on the implementation of

the registration and prior notice interim final rule under the US Bioterrorism Act. The speaker explained that following the events of 11 September 2001, the United States Congress had passed a new law that provides the US Food and Drug Administration with more authority to prevent, prepare for and respond to acts of bioterrorism and other public health emergencies.

79. The speaker explained that because of the new requirements, FDA will now have an inventory of all domestic and foreign facilities that manufacture, process, pack or hold food for human or animal consumption in the United States. This information will help the FDA determine the location and source of food-borne illness, either intentional or accidental; and quickly notify facilities that may be affected. In addition, the speaker noted that FDA must be notified in advance of any shipments of food for humans and animals that are imported into the United States, which will allow FDA to better target food inspections and help intercept contaminated products.

Follow up Discussion

80. During the discussion, it was emphasized that communicating efficiently to Member States while ensuring that information does not lead to dual use (by terrorists) is crucial. Issues related to the use of pesticides in agriculture and their potentially negative effects were also raised, focusing on the way to lower such use in the future, e.g. through integrated pest management schemes and possibly new technologies. The representative of the IAEA also noted the efforts of international organizations in addressing preparedness for and response to nuclear emergencies affecting agriculture. It was generally agreed that international systems such as INFOSAN Emergency could be instrumental in improving global preparedness and thereby a deterrent to terrorists, but that exercises are needed to evaluate the readiness of the system.

81. In response to a question on the cost effectiveness of the Bioterrorism Act even though there have been no acts of food terrorism, Mr Fraser indicated that the additional authorities granted to the US FDA under the law will improve food safety, as this allows the US FDA to address both intentional and unintentional incidents of contamination.

WORKSHOP 1: PARTNERSHIPS ON STRENGTHENING OFFICIAL FOOD SAFETY CONTROL SERVICES (Agenda Item 6.1)

82. The Workshop was chaired by Mr Jos Goebbels, Director of Food Inspection, National Food and Consumer Products Safety Authority in the Netherlands.

83. In order to launch the discussion, the following Conference Room Documents (CRDs) were presented:

- CRD 84 by WHO Regional Office, on its support to member countries;
- CRD 24 by China, CRD 25 by Norway, CRD 40 by Germany, CRD 54 by Thailand and CRD 61 by Uganda on their national food safety systems;
- CRD 2 by Jordan, on its risk based food import control system;
- CRD 23 by Safe Food International, on consensus between consumers and public health organization.

84. The Workshop recognized that both developed and developing countries should enhance their capacities, and their food safety activities should be based on science. While industry takes the prime responsibility to provide safe food, food safety is a shared responsibility which involves industry, governments and consumers. Countries supported the single agency and the integrated food safety systems. Emphasis was put on locally consumed products and small scale producers.

85. Delegates pleaded for better cooperation between countries to improve international trade control, in particular between adjacent countries and for the follow-up of rejected consignments.

86. The Workshop then focused on three important issues.

(i) Difference of standards between domestic and international markets

The Workshop noted that government commitment is essential for food control capacity as far as the local market is concerned. They should not just support the private sector to export and food safety authorities should use experience gained in matching export demand to improve food safety in their own domestic market. This does not mean that export requirements should systematically apply in domestic markets; this should be based on a risk assessment on the understanding that a preventive approach is preferable. Since industry is considered as having the prime responsibility for safe food, food safety control services should not concentrate most of their means on export control, but equally balance the allocation of their resources to control of both domestic and export markets. The gap between developed and developing countries is getting bigger because developing countries lack or do not prioritize the necessary resources and expertise. Therefore, international agencies should help them to assess their capacity needs and importing countries should help developing countries to build capacity. The Workshop noted with satisfaction the offer of the European Commission in this field.

(ii) Sound sciences as a basis to food safety measures

The Workshop recalled that even though it is important to develop expertise to ensure that measures have rationale, it is generally simpler to base national standards and systems on standards, codes of practice and guidelines of the Codex Alimentarius. It highlighted that since food safety control represents a large number of various activities while the resources are limited, resources should be focused where they will have the most impact and priorities should be determined in relation to public health goals. Food safety regulators have to deal not only with risks as assessed by sciences but also consumer perception of the risk, consumers should be aware of extra costs related to their demands. The consultation of stakeholders is well recognized as essential, but the Workshop deplored that language used in food safety is often too obscure and not always consistent; to be effective risk communication should be carried out using simple language.

(iii) Keep it simple

Although science is not simple, particularly the sophistication of detection techniques in the laboratory, the Workshop insisted on the need for organized food safety activities to be kept as simple as possible. Transparency is generally required to inform consumers; systems which are too complicated will not improve it but will confuse consumers. Countries should tailor their national food safety systems to their needs but "not re-invent the wheel". They should build on existing experiences; therefore sharing experience is essential. In general it is not possible to obtain all details in a short time and action needs to be taken without delay. Therefore, to be effective food safety authorities should not wait for the last details before solving problems. The Workshop recalled that good hygienic practices (GHP) are a prerequisite to HACCP implementation and underlined that effective GHP systems are better than a non effective sophisticated HACCP.

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WORKSHOP 2: PARTNERSHIPS ON EPIDEMIO-SURVEILLANCE OF FOOD-BORNE DISEASES AND FOOD SAFETY RAPID ALERT SYSTEMS (Agenda Item 6.2)

87. The Workshop was chaired by Mr Nick Tomlinson, Head of Chemical Safety Division, Food Standards Agency in the United Kingdom.

88. The need to adapt food safety systems to keep up with the challenges posed by the globalization of food trade had been a recurring theme during the Global Forum. Given the potential threats to food safety right through the food chain there was a clear need for food regulators around the world to collaborate more closely and improve information exchange.

89. In the plenary session on Wednesday 13 October a practical demonstration was given of the potential application of INFOSAN. From the discussion at the side event on Monday 11 October it was clear that several countries had a number of questions regarding the use of INFOSAN.

90. Aim of the Workshop:

- To facilitate a discussion on the practicalities of using INFOSAN and to offer suggestions on how to take the issue forward after GF-2 to best serve countries' needs.
- Currently, one in three people worldwide are affected by food-borne disease. Many other food incidents have the potential to impact on consumers in more than one country. Therefore, the need to share information and experience is very clear. The Workshop was looking to explore the needs of countries and to help develop INFOSAN into a system that is of maximum benefit to all countries.

Discussion

91. Three main areas were considered:

- Placing information on INFOSAN;
- Making use of information in the system;
- Operation of INFOSAN Emergency.

INFOSAN

92. The need to identify clear principles for managing information was stressed so that the system will be as informative as possible. To avoid too much detail, it was suggested that it would not be appropriate to include raw data in the system and that criteria be developed regarding the placing of information on INFOSAN. Making use of practical examples, such as salmonella in tahini, would help identify the needs of countries using the system.

93. The need to start with a simple system which can evolve in the light of experience was recognized. An important feature should be to share information at any early stage on emerging issues, such as acrylamide and furans. The system should provide an opportunity to access to risk assessment documents dealing with these issues. This would have the potential to help with capacity building in many countries and also facilitate better use of risk management resources.

94. As a way of developing the system, it was suggested that a small group of developing and developed countries pilot the system. Their experience could be shared with other countries through an electronic forum. A number of networks and links to databases were identified that

could be added to the system at a later date. It was also suggested that a workshop building on the pilot system should be convened at the next session of the Codex Alimentarius Commission.

INFOSAN Emergency

95. This system is separate and distinct from INFOSAN and is intended only for emergency situations. Individual countries remain responsible for determining and declaring food safety emergencies. It was noted that Codex has adopted guidelines on sharing information in food safety emergencies.

96. The Workshop was informed that FAO/WHO have developed draft guidance for national INFOSAN Emergency Contact Points which will be circulated to them for comment shortly. A consultation will be held to then further develop the document.

97. It was recognized that INFOSAN Emergency will not be used very frequently. However, to ensure countries are prepared to deal with emergencies, exercises should be held at frequent intervals to test the system. The need to consider how to communicate with stakeholders when an emergency has ended was also recognized.

98. A number of capacity building issues were raised including training of contact points and access to the Internet. These were recognized to be important issues that need to be addressed for the system to work effectively.

99. INFOSAN has many potential benefits. Having INFOSAN in place will go a long way towards building effective food safety systems.

CONCLUDING SESSION

100. The concluding plenary session was devoted to the presentation of the draft summary report, the discussion on the Chairmen's summary and an exchange of views on possible subsequent fora.

Presentation of the draft summary report

101. The summaries of the plenary discussion on *Strengthening official food safety control services* and *on Epidemio-surveillance of food-borne diseases and food safety rapid alert systems* were presented respectively by Messrs. Ezzeddine Boutrif and Jorgen Schlundt from the Joint FAO/WHO Secretariat. The participants were asked to submit their proposals for amendments to the Secretariat so that the summary report could be finalized.

102. Messrs. Jos Goebbels and Nick Tomlinson reported on the results of the discussion during the workshops they had chaired respectively on *Partnerships on strengthening official food safety control services* and on *Partnerships on epidemio-surveillance of food-borne diseases and food safety rapid alert systems.*

103. The Chairmen read their Summary, the English version of which had been distributed to the participants. Although the text was translated orally by interpreters, several delegates complained that since it was not available in all the official languages of the Forum, they were not in a position to contribute to the discussion. The Secretariat explained that this was due to time constraints and the unavailability of a translation team at the meeting. It was stated that this request would be considered in future fora. Nevertheless, a number of comments were made by delegations and subsequently integrated in the final version (Annex I).

Discussion on a possible Third Global Forum (GF-3)

104. Delegates appreciated that the Second Global Forum had given them the opportunity to meet regulators from many countries of all regions of the world to exchange information and share experiences on food safety issues of particular importance to them, and considered that this had led to a better understanding of these issues. Concerning the holding of a third Global Forum (GF-3), all interventions were generally supportive of the need to hold such an event. However, several delegates requested that the original objectives of the Global Fora - to exchange information and experiences - should evolve to develop a common understanding and promote action and commitments. Several delegations made suggestions on the format to reduce the number of topics and documents, and devote more time to discussion. Other delegations suggested that the main theme of future Fora should be less general and more focused on a limited number of topics. It was also proposed that future Fora could be held back to back with regular sessions of the Codex Alimentarius Commission to save costs. The Secretariat took note of these comments and announced that it would conduct an e-forum to solicit the views of the Member countries on the subject and that the results would be presented to delegations attending the next session of the Codex Alimentarius Commission in July 2005.

Closing of the Forum

105. Mr Apichart Pongsrihadulchai officially closed the Second Global Forum of Food Safety Regulators on behalf of the Government of the Kingdom of Thailand. He thanked the organizers for their efforts and the delegates for their active participation in the discussion.

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ANNEX I

CHAIRMEN'S SUMMARY

This report was discussed by the participants during the conclusion of the Forum, but was not formally adopted as it was only available in English. As such, it is intended to reflect the Chairmen's views rather than the views of the entire Forum.

The Second FAO/WHO Global Forum of Food Safety Regulators was convened under the main theme of *Building effective food safety systems*. It discussed a number of topics under the following sub-themes: *Strengthening official food safety control services* and *Epidemio-surveillance of food-borne diseases and food safety rapid alert systems*. A total of 394 participants from 90 countries and several international and non-governmental organizations participated in the Forum.

For each sub-theme and topic, working papers were presented by food safety experts and discussed in plenary session. Likewise, a large number of Conference Room Documents provided opportunity for direct exchange of country experiences. Some of these were presented and discussed in two parallel workshops. Delegates actively participated in the discussions and openly expressed their concerns, explaining the difficulties they face and the ways in which they try to deal with them. It became very clear that food-borne disease is a problem in both developing and developed countries, causing an unacceptably high level of human suffering and resulting in high costs to society. The role of the Codex Alimentarius Commission in establishing international standards for food safety and quality was recognized as complementary to the role of the Global Forum in exchanging information and discussing collaborative actions towards promoting a safer food supply.

It became clear that profound changes to food safety systems are presently taking place in some countries and that many other countries can learn from these experiences when revising their own systems.

The Forum discussed specific future needs in three main areas:

Learning from each other:

Political commitment and simplification of legal systems: Based on the experiences shared by the participants at the Forum, it was recognized that there is a need for a strong political commitment and solid legal basis to support food safety control systems and actions. This commitment should be part of a national strategy based on the sharing of responsibilities among food safety authorities, farmers, food processors and manufacturers, food traders, caterers and consumers with effective national and sub-national coordination. Based on this commitment, a simplification of the legal system for food control, which in many countries is still fragmented and excessively complex, is necessary. It was noted that several countries now have a single food law enabling unified, integrated action.

A unified approach to food safety management: The Forum noted with interest that a number of countries have taken concrete action to re-organize their food safety systems towards a unified or integrated structure. This approach should provide the basis for the involvement of all stakeholders, working together toward a common goal and helping to ensure a holistic approach to food safety. This approach also allows for the comparison and balancing of different risks and maximizing outcomes on the basis of existing resources.

It became clear that all three existing organizational structures for national food control systems (multiple agency, single agency and integrated systems) can be effective, provided that responsibilities are clearly defined, that they cover the entire farm to fork continuum and that coordination is well formalized. Key elements for managing food safety control services include a risk-based prioritization system, clear task definition, proper training of staff, harmonization of goals and objectives and crisis preparedness.

Integration of data to enable action: It was explained that national surveillance systems should be targeted toward the largest public health problems and integrate relevant data across the entire food production and distribution chain, including data on animal and plant health and human disease. Surveillance data also needs to be linked to risk management and risk communication activities. The integration of data will enable attribution of disease burden to food source, and thereby provide a basis for targeted interventions. It was pointed out that although the use of surveillance and other data to describe the scientific reality may be done at international level, risk management options and risk communication messages need to be country specific.

Prevention of disease through good practices: The importance of providing training, formal and informal, at all levels of the food chain, including food handlers and consumers was highlighted. Consumers need to be educated in hygienic handling of food and the 'Five Keys to Safer Food' programme was presented as an example of food safety training aimed at the community level as well as small food producers, street food vendors etc. Farmers should be educated in the production of safe food, in particular through the application of good agricultural practices, including integrated pest management. Good manufacturing practices and the observance of hygienic principles in food production were seen as essential in the prevention of food-borne diseases. In several countries, governmental support for HACCP implementation has yielded positive results. However, small scale producers have particular difficulties in applying HACCP principles, which has prompted FAO and WHO to develop a guidance document on this subject.

Working together:

Linking food safety regulators together in real time: The Forum witnessed the inauguration of a new network of food safety authorities (INFOSAN), managed by WHO in cooperation with FAO and aimed at enabling real-time interaction and sharing of information and experiences on food safety. The network will include an emergency arm to be activated in case of major food-borne disease or food contamination incidents. An inter-continental panel discussion amongst senior food safety regulators via video-conference demonstrated to the Forum how food safety authorities from different parts of the world can discuss important food safety issues in real time through the network. It was concluded that both the general exchange of new information through the network and the ability to deal with international food safety incidents (including intentional contamination) can contribute to improving food safety globally. The INFOSAN system is linked to the existing WHO International Health Regulations and global alert and response system.

Providing information on national food safety regulation: The Forum observed a live demonstration of the new FAO International Portal on Food Safety, Animal and Plant Health. This portal, developed jointly with OIE, UNEP, WHO and WTO, will enable users to easily access official SPS related information. It will also provide a vehicle for countries to share notifications on food safety measures and access international standards and risk assessment information.

Reaping the benefits of Codex: The Forum noted that the Codex system provides an important opportunity for countries to work together to develop international standards in a representative manner. The Forum recognized the value of greater participation in the Codex process, supported also by the FAO/WHO Trust Fund for participation in Codex, with the overall aim of developing truly global standards and harmonizing national standards with Codex. The recently established Codex Trust Fund will facilitate the participation of developing countries in Codex activities. It was also suggested that developing countries would benefit from greater use of basic Codex texts when building their food control systems.

Issues that need action

Capacity building for food safety systems in developing countries: Compliance with food import requirements of developed countries and meeting the food safety needs of domestic consumers can place heavy constraints on food safety systems in developing countries. It was pointed out that while the WTO Agreement allows for recognition of equivalence, many developing countries are having difficulty proving that their food safety systems are indeed equivalent to those of their trading partners. It was noted that WTO has recently issued a document that provides guidance in the establishment of equivalency. It was agreed that because of the importance of food safety and food trade, food safety systems in developing countries should be supported through technical assistance, capacity building and partnerships, as specified in the provisions of the SPS Agreement.

Intensified work in support of national action to combat microbiological disease from food: The Forum noted the need for FAO and WHO to focus increased efforts on managing food safety risks from microbiological contamination. It called upon Codex to speed up its work on the development of guiding documents enabling Member countries to address more efficiently the microbiological contamination of food. Such contamination most likely presently constitutes the largest portion of the significant global disease burden from food, notably leading to a high mortality rate in developing countries and causing the rejection of contaminated food exports. Risk assessments of chemical contaminants also should continue under the existing FAO/WHO expert committees which provide scientific advice to Codex and member countries.

Genetically Modified (GM)Food: The Forum stressed the importance of clear communication of issues related to foods derived from modern biotechnology and recognition of consumers concern. However, it also acknowledged the existence of internationally agreed Codex principles and guidelines for the assessment of food safety risk related to GM foods. The Forum discussed that a case-by-case, step-by-step pre-market evaluation of each new GM food is necessary. Developing countries often do not have sufficient resources for in-depth evaluations and urged GM developers and relevant national authorities to share such evaluations freely.

Reliable food import/export certification programmes: The importance of a reliable food export certification programme was illustrated. Export certification programmes have resulted in decreased importation control, minimization of import rejection, reduction of cost and improvement of the image of goods from that country. The discussion of food importation programmes focused on how these systems attempt to ensure that food is safe before going into the national marketplace.

APPENDIX I

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LISTE DES PARTICIPANTS
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APPENDIX II

SECOND FAO/WHO GLOBAL FORUM OF FOOD SAFETY REGULATORS
Bangkok, Thailand, 12-14 October 2004
Welcome speech
By
Mr Apichart Pongsrihadulchai
Secretary General
National Bureau of Agricultural Commodity and Food Standards

Your Excellency, Deputy Prime Minister of Thailand,
Mr Chaturon Chaisang
Mr Hartwig de Haen, FAO Assistant Director-General
Dr Kerstin Leitner, WHO Assistant Director-General
Honourable Regional Representatives of FAO and WHO
Mr Banphot Hongthong, Permanent Secretary, MOAC
Distinguished Delegates, Ladies and Gentlemen,

It is a great honour to have the presence of your Excellency Deputy Prime Minister of Thailand, Mr Chaturon Chaisang. First of all, I would like to express my profound gratitude to his Excellency for his kindness in presiding over the opening ceremony of the Second FAO/WHO Global Forum of Food Safety Regulators (GF-2). It is indeed a great honour for Thailand to host this Conference. On behalf of the host organization, I have a great pleasure to extend to all delegates the most cordial and warmest welcome to Bangkok, Thailand which is known as "The land of smile".

Ladies and gentlemen,

As we are well aware, the First Global Forum of Food Safety Regulators was jointly organized by FAO and WHO in Morocco under the theme *"Improving Efficiency and Transparency in Food Safety Systems – Sharing Experiences"*. The First Global Forum unanimously agreed that another Global Forum should be held in 2004, with as its main theme, *"Building Effective Food Safety Systems"*.

The FAO Council held in June 2003, in Rome, Italy, endorsed the convening of the Second Global Forum of Food Safety Regulators and welcomed with appreciation the offer of the Government of Thailand to host the Conference.

I am very proud to inform you that there are more than 500 people from 104 countries representing government and non-government as well as international organizations participating in the Second Forum.

I am pleased to state that FAO and WHO have started with an excellent initiative for the cooperation among countries to build an effective food safety system. It is my belief that by the end of this three days discussion, better and closer inter-country relationships will be created for safety systems for global populations.

Ladies and gentlemen,

As the host, we would like to assure you that we consider it is our duty to assist whatever you need. Should you have any matter that we can be of assistance, please do not hesitate to contact our staff. If you have some free time after the Conference, do not forget to spend your time for sightseeing around the amazing city of Bangkok. There are a lot of interesting things to offer.

Finally, I would like to thank FAO and WHO for their kind support and make this Conference possible. I would like also to wish all delegates a successful and productive discussion as well as a pleasant stay in Thailand.

Thank you.

APPENDIX III

SECOND FAO/WHO GLOBAL FORUM OF FOOD REGULATORS
Bangkok, Thailand, 12-14 October 2004
Opening Remarks
By
Dr Kerstin Leitner
Assistant Director-General, Sustainable Development and Healthy Environments
World Health Organization, Geneva

His Excellency the Deputy Prime Minister Chaturon Chaisang
Mr Secretary-General Apichart
My colleague from FAO, Mr de Haen
Ladies and Gentlemen,

On behalf of the World Health Organization, I welcome you to this Second Global Forum of Food Safety Regulators and join my colleague from FAO in thanking the Government of Thailand for hosting the meeting. I would like to also take this opportunity to thank the donors that made contributions enabling this event.

Food safety was in the past not always addressed as a public health issue. In recent years, the public perception of the safety of our food supply has been shaken.

WHO's reporting system of cause of deaths shows that every year, food- and waterborne diarrhoeal diseases amount to a sad and unacceptable 1.8 million deaths, mainly of infants and children in developing countries. In industrial countries, food-borne disease from microorganisms alone affects up to 30 percent of the population on an annual basis, and we also have a disease burden from chemicals in food.

Some countries have been able in recent years to show a reduction in the number of cases of certain traditional food-borne diseases such as Salmonellosis. However, if we look at the broader trends, the increase in the incidence of Salmonella infections in humans in the years between 1980 and 2000 amounts to a factor of up to 20 for many of the countries in Europe and North America. In addition, Campylobacter in food is fast becoming the most common cause of food-borne disease.

Another example of a globally emerging problem in some way resulting from our newer agricultural production systems is antimicrobial resistance resulting in difficulties treating some of the most serious cases of food-borne disease.

Recent public health emergencies in this region, such as Avian flu, Nipah virus and SARS are all in some way related to the way we handle animals for human consumption.

The outcome of food-borne disease imposes strains on health systems and reduces economic productivity. Recent estimations from the USA suggest an annual cost of more than 6 billion dollars from food-borne disease to the US economy. Such figures of course do not include further economic losses within production and trade systems. The impacts on trade and national economies can be enormous, given that trade barriers and food safety related bans result in major economic losses for exporting countries and affects the livelihood of millions.

Our chains of food supply are often composed of many steps, and at each stage there are numerous possible occasions for contamination of the food. This Conference comes at an important point in time, and hopefully we can make a difference in moving forward this important issue also within national priority setting.

As part of our future work, we need to make sure that the public can get answers to their questions about the food they eat.

Protecting the health of consumers is at the core of WHO's mandate. Stable rural environments, healthy cities, and safe food all along the food chain from the producer to the consumer, are all important health determinants. Therefore WHO believes that in order to influence development in a positive way, it is important for the health sector to work closely with all the other sectors concerned in addressing food safety issues and to work with different government departments, civil society, consumer groups, private entities and the media.

Many problems in the past stem from the inability of government authorities to work together.

Some countries have in recent years shown the way forward by creating single food safety agencies overseeing the whole food chain. These agencies work in an independent capacity of line ministries but under the collective oversight of these ministries, normally agriculture, health, trade. Furthermore these food safety agencies are supported by independent scientific committees providing them with the necessary scientific advice. Local authorities run inspection services and advise the food safety agency when there is cause for concern in order to define the most appropriate response. These developments are encouraging.

This Second Global Forum on Food Safety is supported by WHO and FAO working together.

In addition to the Global Forum, the FAO/WHO partnership has seen in recent years a number of important new initiatives to assist and facilitate improved food safety. Together with the World Bank, the World Trade Organization and the World Organization for Animal Health, FAO and WHO have developed the Standards and Trade Development Facility (STDF). STDF will focus on strengthening the capacity of countries to implement and use internationally agreed food safety standards.

This Forum will see the inauguration of several other major initiatives led by FAO and WHO. One such specific initiative is a new global network of all food safety authorities, which has received major interest from Member States. So far, 102 countries have registered as participants in the network. The network (INFOSAN) will improve the ability of countries and authorities to respond jointly and in a timely manner to food related emergencies.

Delegates, now is a good time to scale up our collective efforts on food safety, initiating evidence collection and country-level surveillance and implementing effective responses, as well as ensuring that the issue is high on the political agenda everywhere. We need to share our experiences - good and bad - so that future food safety systems can improve and leap-frog over past mistakes.

I wish you a successful conference, and look forward to following your deliberations in this critical area of public health.

Thank you.

APPENDIX IV

SECOND FAO/WHO GLOBAL FORUM OF FOOD REGULATORS
Bangkok, Thailand, 12-14 October 2004
Opening Speech
By
Mr Hartwig de Haen
Assistant Director-General, Economic and Social Department,
Food and Agriculture Organization of the United Nations

Your Excellencies,
Honoured guests and Forum participants,
Ladies and gentlemen,

On behalf of the Food and Agriculture Organization of the United Nations, I extend to all of you a warm welcome to this Second FAO/WHO Global Forum of Food Safety Regulators.

Ms Leitner has already indicated the magnitude of the health burden resulting from unsafe food that is still affecting millions of people in the world. We are here because countries recognize that they not only need to exchange experiences in the face of the growing human economic and social costs of unsafe food, but also take action and improve collaboration. We thank the government of the Kingdom of Thailand for their kind hospitality in hosting this event.

I will briefly address three main topics.

1. Adoption of internationally agreed food safety standards

The first is that we need to make progress toward the adoption of the existing international standards, i.e. Codex.

We are all aware that it is becoming increasingly difficult for countries to cope with the growing number and complexity of the internationally- accepted Codex standards and regulations. In 1970, there were approximately 15 Codex standards relating to food safety and approximately 200 Maximum Limits for pesticide residues, veterinary drugs, food additives and contaminants. Today, almost 300 standards and almost 4000 limits on various substances are in place. Nevertheless, the adoption of these standards is our common aim, and therefore a major contribution of this Forum would be if we can identify effective food safety systems that minimize compliance costs throughout the food chain, while ensuring that the food people eat is safe.

We observe that some countries or trading groups have stricter standards than Codex. This is of course fully covered by the SPS Agreement, as long as it is scientifically justified. However, it is obvious that stricter standards further increase the compliance costs for poor countries, which makes capacity building towards effective food control systems even more urgent. This leads to the second topic that I would like to address, capacity building.

2. Capacity Building

Based on the results of an FAO questionnaire administered mostly to persons from developing countries, we now have a better understanding of the specific demand for capacity building. To meet the demands, FAO has been involved in four main types of actions, along with others.

1) Access to official regulatory information. FAO launched the International Portal on Food Safety, Animal and Plant Health in May 2004. The portal will be demonstrated at 12:30 today, immediately after the close of the first session. We hope that it will be widely used by national governments, trading partners, and producers and count on inputs from governments and agencies to make the portal fully useful.

2) Improving national food safety systems and adherence to international standards. FAO has a large number of projects, at national and regional levels, covering all aspects of food safety systems, from food law to laboratory testing and inspection. Although donors are generously supporting this programme, still the demand exceeds our capacity to deliver. We are hopeful that our collaboration with OIE, the World Bank, WHO, and WTO in the Standards and Trade Development Facility will give further impetus to these efforts. We trust that this Second Global Forum will provide us more guidance in focusing our interventions on the needs and priorities of member countries.

3) Strengthening of regional cooperation. As you know, FAO and WHO have already convened Regional Conferences on Food Safety, one for Europe and one for Asia and the Pacific. I am pleased to confirm that preparations are underway to do the same for the remaining regions.

4) Provision of tools and guidelines. FAO, often jointly with WHO, has published a number of valuable manuals and guidelines related to effective food safety systems. For example, the FAO/WHO Guidelines for Strengthening National Food Control Systems were published in 2003 and copies are available at the publications desk. A Manual on Food Safety Risk Analysis, a training package on Improving Participation in the Work of Codex and a Food Safety Capacity Building Needs Assessment tool will also all be demonstrated in side events during the Forum and will be available in printed format in the upcoming months. These tools will prove to be invaluable resources for all FAO/WHO member countries in the future.

3. Food chain approach

Finally, I would like to state that, in FAO's view, countries need to address food safety problems within a holistic food chain approach. As was also underlined at the regional conferences and is evidenced by experience in various countries, it is only through a food chain approach that safe and high quality food can be ensured in a cost effective manner.

I suggest that the food chain approach, as such, is no longer in question. Rather we see this Forum as an occasion to determine the ways and means to best apply it. There are many critical issues to be resolved on the road towards improving food safety: I only mention such issues as: how to handle zero tolerance levels; how to accelerate cost reducing mutual recognition of food safety systems amongst trading partners; and how to make traceability affordable.

Conclusion

The topics you will address during the next few days are of major importance to ensure food safety for the benefit of human health and development of food trade. I want to thank you in advance for your efforts in addressing them and am convinced that this Forum will produce real progress towards ensuring that everyone in the world has access to safe food.

I thank you for your attention.

APPENDIX V

SECOND FAO/WHO GLOBAL FORUM OF FOOD SAFETY REGULATORS

Bangkok, Thailand, 12-14 October 2004

Opening Address of
His Excellency Mr Chaturon Chaisang,
the Deputy Prime Minister of Thailand

Dr Hartwig de Haen, Assistant Director-General of FAO,
Dr Kerstin Leitner, Assistant Director-General of WHO,
Honourable Regional Representatives of FAO and WHO,
Your Excellencies, Honoured Guests,
Distinguished Participants, Experts, Ladies and Gentlemen,

On behalf of the Royal Thai Government, I take great pleasure in welcoming each of you to Bangkok for FAO's and WHO's "Second Global Forum of Food Safety Regulators."

I would like to start by congratulating FAO and WHO on the success of their "First Global Forum of Food Safety Regulators" hosted by Morocco in 2002, and followed by a series of "Regional Conferences on Food Safety," held thus far in Hungary and Malaysia. This series of events provide great opportunities for the international community of food safety regulators to benefit from each other's valuable information and expertise. They also demonstrate the spirit of cooperation between international organizations, such as FAO and WHO in particular, and countries around the world in improving food safety management, including response to international food safety emergencies.

The theme of this Second Forum is "Building Effective Food Safety Systems" and it aims to provide the global community of food safety regulators with a venue to discuss ideas, exchange information, and share experiences.

Ladies and gentlemen,

Food safety is an issue of vital importance that affects all of the world's people, especially in today's increasingly complex and competitive global food markets. According to its motto as "Kitchen of the world," Thailand aims to provide safe food for its own people, while also providing safe food for the growing international marketplace. Thailand's initiative to host this important food safety meeting is reflective of the governments' emphasis on Food Safety, as 2004 has been named "Food Safety Year" in Thailand.

In Thailand, like many countries, the goal of improving food safety is hampered by an outdated food safety system including: fragmented legislation; multiple jurisdictions; inconsistent enforcement; shortcomings in food surveillance and monitoring; insufficient laboratories and technologies, and the lack of trained human resources. In 2002, the Thai government addressed these challenges through the reorganization of the food control system and has achieved great progress in addressing these issues. As the aim of this Forum is for regulators to work together and to share information and expertise, I would like to begin this Forum by sharing some key strategies to enhance food safety for your consideration and deliberation:

1. Utilize a preventive approach to food safety throughout the food chain, from "farm to table";

2. Build safety and quality into the food production process through the application of Good Agricultural Practices, Good Manufacturing Practices, good hygienic practices, and the Hazard Analysis and Critical Control Point System (HACCP);
3. Base the food control risk management process upon science and transparency, especially through efforts made to separate the food safety enforcement agencies from the standards and regulation development agencies;
4. Promote a safety assurance scheme to facilitate mutual recognition agreements with trading parties;
5. Increase national voluntary standards and codes of practices to facilitate the certification system;
6. Increase the efficiency of risk-based inspection services;
7. Improve laboratory performance and coverage of the hazards involved in food safety;
8. Improve communication and involvement of stakeholders in all aspects of food safety at all stages of the decision-making process.
9. Initiate and implement traceability measures.

To implement these strategies, a strong political commitment is needed to provide a clear national policy, as well as financial resources, to empower these key strategies and ensure success in improving food safety. Both developing and developed countries need to continue to strengthen their food safety control system, including infrastructures, personnel and other resources, to ensure food safety and quality as well.

Ladies and gentlemen,

Those involved with food safety regulations from around the world have gathered here today to work together to improve food safety, thus promoting good health for consumers, as well increasing income levels through increased food trade. Many interesting and timely papers will be presented on the sub-themes of the Forum, namely "Strengthening official food safety control services" and "Epidemio-surveillance of food-borne diseases and food safety rapid alert systems". These are both essential elements of "Building Effective Food Safety Systems".

I am confident that the sharing of information and expertise which will occur here this week and the subsequent collaboration at the international, regional, and national levels are essential to improve food safety around the world.

Finally, permit me once again to congratulate the FAO and WHO on this enormous contribution towards building effective food safety systems which are important to the whole world.

I understand that you have a busy schedule ahead, and I wish you very fruitful discussions. Please also have a pleasant stay and enjoy fascinating Thailand!

On this note, I now have the pleasure to officially declare open – "The Second Global Forum of Food Safety Regulators!"

Thank you!

APPENDIX VI
(GF 02/1)

SECOND FAO/WHO GLOBAL FORUM OF FOOD SAFETY REGULATORS

Bangkok, Thailand, 12-14 October 2004

PROVISIONAL AGENDA

Agenda Item	Subject matter	Document Reference Number
	Opening of the Forum	
1.	Election of Officers	
2.	Adoption of the Agenda and Timetable	GF 02/1
3.	**Keynote Address - *Building effective food safety systems: "Application of risk analysis"***	CRD 1
4.	**Strengthening official food safety control services**	GF 02/3
4.1	Defining the responsibilities and tasks of different stakeholders within the framework of a national strategy	GF 02/4
4.2	Legal basis for food safety official and non-official control	GF 02/5
4.3	Training of staff on official food safety control	GF 02/6
4.4	How official services foster and enforce the implementation of HACCP by industry and trade	GF 02/7
4.5	Import/export control and certification	GF 02/8
5.	**Epidemio-surveillance of food-borne diseases and food safety rapid alert systems**	GF 02/9
5.1	Food contamination monitoring and food-borne disease surveillance at national level	GF 02/10
5.2	International cooperation on food contamination monitoring and food-borne disease surveillance	GF 02/11
5.3	Dealing with emerging risks related to the environment and new technologies	GF 02/12
5.4	Prevention and response to intentional contamination	GF 02/13
6.	**Workshops on partnership**	
6.1	Strengthening official food safety control services	
6.2	Epidemio-surveillance of food-borne diseases and food safety rapid alert systems	
7.	Presentation of the draft summary report	CRD W

N.B.: Documents will be distributed by the Joint FAO/WHO Secretariat of the Second Global Forum of Food Safety Regulators. Inquiries should be addressed as follows to:

the Food Quality and Standards Service, Food and Nutrition Division
Food and Agriculture Organization of the United Nations (FAO)
Viale delle Terme di Caracalla, I-00100 Rome, Italy
Fax No: +39 06 570 54593; E-mail: Food-Safety-GF@fao.org

or

the Food Safety Department (FOS), Sustainable Development and Healthy Environments
World Health Organization (WHO)
Avenue Appia, CH-1211 Geneva 27, Switzerland
Fax No: +41 22 791 4807; E-mail: Food-Safety-GF@who.int

Working documents will be made available as and when prepared, on the website for the Second Global Forum of Food Safety Regulators at the following address:

http://www.foodsafetyforum.org/global2

Delegates are kindly requested to bring with them to the meeting all documents which have been distributed as the number of additional copies which can be made available at the meeting is limited.

NOTES ON THE PROVISIONAL AGENDA

Opening of the Forum: The Second Global Forum of Food Safety Regulators will be opened by a high-level Thai official.

Item 1 Election of officers: Delegates will designate a Chairperson and a Vice-Chairperson to lead the plenary meeting of the Forum.

Item 2 Adoption of the Agenda and Timetable: In order to keep the Forum focused, any proposals for additional topics must be within the main theme, and integrated and discussed with existing items.

Item 3 Keynote address – *Building effective food safety systems: application of risk analysis*: Several countries have recently adopted new strategies in food safety based on risk analysis; experiences on the application of this concept in building food safety systems will be presented in the form of a keynote address. It will not be discussed.

Item 4 *Strengthening official food safety control services*: Official food safety control is one of the main elements of a food safety system. While it is the responsibility of industry to provide food which is safe and suitable for consumption by applying hygienic practices and controlling food hazards, governments have to adequately protect consumers from illness or injury caused by food and maintain confidence in internationally traded food. For this purpose, their official control services should be in a position to effectively enforce other relevant food safety regulations, which depends on their organizational structure and management. Different ways to improve both organization and management will be discussed, taking into account that more detailed discussions will follow the presentation of the topic papers below.

4.1 *Defining the responsibilities and tasks of different stakeholders within the framework of a national strategy*: The first step for all countries is the development of a national strategy which enables the country to determine priorities to ensure consumer protection and economic development and to develop an integrated, coherent, effective and dynamic food control system. It will, *inter alia*, clarify the respective roles of different government agencies as well as industry and consumers.

4.2 *Legal basis for food safety official and non official control*: Food safety control should be carried out on one hand by industry through the use of systems such as HACCP and on the other by official services. Both control activities should be supported by a comprehensive legal system. Food safety laws and regulations form the foundation of food control systems across the continuum of the food chain. They establish the right, power and obligations of every stakeholder involved in control procedure so that they can efficiently carry out their tasks.

4.3 *Training of staff of official food safety control services*: The food inspector is the key person who has day-to-day contact with the food industry, trade and often the public, and whose activities are increasingly diversified and sophisticated. He/She should be duly trained to carry out the various missions. Furthermore, the responsible persons at the different levels of the hierarchy of control services need appropriate training in management.

4.4 *How official services foster and enforce the implementation of HACCP by industry and trade*: The application of the HACCP system is recognized around the world as the chosen system of food safety management and the prevention of food-borne diseases. Since the effective application of HACCP by industry, in particular in small businesses, encounters various obstacles, the food inspector should foster its implementation. Furthermore, the audit of the HACCP system is a key element of official inspection of a food establishment.

4.5 *Import/export control and certification*: Consumer confidence in imported food requires an effective import control by competent authority, which carries out its own control on products and often on producing establishments, but which relies above all on official inspection and certification of the exporting country. Confidence in internationally traded food requires a reliable import/export control and certification system which implies independence and proficiency of inspectors as well as the appropriate organization of the competent authorities in both exporting and importing countries.

Item 5 ***Epidemio-surveillance of food-borne diseases and food safety rapid alert systems:*** The development of an effective food safety strategy must be based on a reliable system of information on the situation of food-borne diseases. The implementation of effective food safety measures, in particular in case of emergency, requires accurate and up to date reporting which involves official services in charge of both human health and food control, as well as collaboration of other stakeholders. Furthermore, in order to be able to launch emergency response where needed, it is necessary to anticipate risks and develop a rapid alert system.

5.1 *Food contamination monitoring and food-borne disease surveillance at national level*: Each country should develop an effective system for monitoring potential hazards in the food supply and for surveillance of food-borne diseases which is integrated so that links between food contamination and food-borne diseases can be established and analyzed. It will permit the estimate of the burden of food-borne disease, identify trends and priorities, detect outbreaks and emerging issues, and evaluate strategies.

5.2 *International cooperation on food contamination monitoring and food-borne disease surveillance*: Since food contamination has a high potential of spreading across borders, bodies in charge of epidemio-surveillance and food monitoring in the different countries should exchange information and collaborate in data collection, analysis and communication in order to improve the relevance of their risk assessment and cooperate in risk management. International cooperation is essential for detection of regional or global epidemics, emerging hazards and intentional contamination, as well as for evaluation of global trends and building communication networks. The future use of the newly established international food safety authorities network (INFOSAN) should be further discussed in this context.

5.3 *Dealing with emerging risks related to the environment and new technologies*: The environment may be at the origin of food hazards; persistent organic pollutants, such as dioxins and PCBs and heavy metals, such as lead, mercury and cadmium may contaminate food through pollution of air, water and soil. New technologies, such as biotechnology, and their possible adverse effects are of great concern for public health and international trade. The assessment of the related risks requires data collection and analysis, in a comprehensive framework. Management measures should be established accordingly.

5.4 *Prevention and response to intentional contamination*: While only a few cases of intentional contamination of food have been proven, this risk, including bio-terrorism threats, may have a local, regional or global dimension and should be given serious consideration by food safety authorities and the food industry. Since both unintentional and deliberate contaminations may be managed by many of the same mechanisms, intentional contamination should be integrated into existing national food safety and disease surveillance programmes, in particular in alert systems. International communication and cooperation on this issue are essential.

Item 6 Workshops on partnership: The aim of the workshops is to identify practical follow-up to the discussions on the two sub-themes. They could consider all forms of partnerships such as communication and exchange of information, technical assistance or cooperation, regional approach, international food safety authorities' network. The participants will be divided into two groups that will work in parallel sessions. Each group will designate a Chairperson and a Vice-Chairperson to lead the workshops.

6.1 Workshop on strengthening official food safety control services

6.2 Workshop on epidemio-surveillance of food-borne diseases and food safety rapid alert systems

Item 7 Presentation of the draft summary report: The Chairperson of the Forum will present the summary report of the discussions drafted by the Secretariat. This report will fully reflect the different points of view and approaches expressed during the Forum.

Closing of the Forum: The Second Global Forum of Food Safety Regulators will be closed by a high-level Thai official.

APPENDIX VII
(Conference Room Document 1A)

SECOND FAO/WHO GLOBAL FORUM OF FOOD SAFETY REGULATORS
Bangkok, Thailand, 12-14 October 2004
Keynote address
by
Mr Richard Fadden, President
Canadian Food Inspection Agency

Introduction

Thank you for the opportunity to address this important and prestigious gathering. On behalf of Canada, I want to commend the Food and Agriculture Organization and the World Health Organization for putting together a very thought-provoking and instructive programme. I also wish to thank the Government of Thailand for hosting this Second Global Forum of Food Safety Regulators.

At the First Global Forum in Marrakesh, countries quickly saw the value in gathering to exchange information and share experiences. Now we have come together to build upon the success of the first Forum by looking at practical aspects of building effective food safety systems.

Why is this Forum important?

Canada recognizes that there is tremendous value to be gained by bringing together the most senior food safety managers from governments around the world. In a global marketplace, where one nation's issues can quickly become everyone's issues, building networks to share information and build capacity will undoubtedly help to enhance the effectiveness of food safety systems around the world. However, this Forum permits not only the exchange of experiences and best practices but also the opportunity for proactive discussions on how to manage new and developing challenges facing all of us.

Current and future challenges

All of us involved in any aspect of the food continuum face enormous new challenges. I would like to spend a few minutes discussing some of them.

In recent years, we have seen changes in food production methods which have challenged the traditional approaches to food safety. Much has changed since Governments established Codex in 1963. Globalization of trade in food has brought challenges to food regulation. The global value of food trade now exceeds $US 500 billion. In 2003, Canada alone exported $24.3 billion in agriculture and agri-food products to over 180 countries and imported $20.6 billion of these products from 190 countries. Global trade in food is inherently a good thing as it offers consumers a wide range of food choices and contributes to the food security of many countries. However, it also raises the need for us as regulators to be more alert than ever to food safety contamination incidents which occur in any region with which we trade - which could be anywhere in the world.

Changes in food production methods in intensive farming in the animal products sector pose another challenge as these practices rely on the use of antimicrobials and could lead to the emergence of resistant bacteria in farm animals, a potential source of infection for humans.

Intensive livestock operations can also have negative impacts on the environment. Intensive farming can result in the rapid spread of potential animal diseases and zoonoses as many of us here have seen with avian influenza.

Advances in science and technology are another key challenge. For example, food safety scientists now have tools at their disposal to detect and measure potential risks that may have been unknown previously, or which may have required much higher concentrations before detection was possible. This has both positive and unfavourable consequences. Obviously by providing more information for risk assessors to work with, advances in science can promote improved food safety. Yet these new techniques make it more likely that some will expect and demand costly control measures for risks that are minimal and do not warrant the measures. This brings the added challenge of communicating risks to the public so that they can make informed decisions on risk.

That brings me to the challenge of a more aware and demanding consumer. Consumers today are more aware of health issues and possible risks to health from food. They are more assertive than ever of their right to participate in decision-making. High-profile incidents like BSE and E.coli, dioxin and salmonella contamination of food have attracted high levels of media coverage of food-borne health risks. Consumer awareness is a good thing, but the adverse impact of sensational media reporting causes food safety regulators concern.

The last challenge that I wish to discuss is that of bioterrorism. Since 9/11, the world has changed. The food supply has become a potential target for terrorism. We, as food safety regulators, must be ever vigilant to protect the safety of the food supply.

How do we face these challenges?

Our primary response to these challenges must be with food safety systems that are science based and transparent.

In Canada, our food safety system is built on three fundamental principles:

1. the health of the population must remain paramount;
2. policy decisions must be grounded on scientific evidence; and
3. all sectors and jurisdictions must collaborate to ensure safe food.

International bodies such as Codex Alimentarius and the World Organization for Animal Health have developed risk analysis approaches to guide countries. These bodies have identified three major components in risk analysis:

- risk assessment,
- risk management, and
- risk communication.

In Canada, we have based our risk analysis framework on these approaches. The Canadian approach, at the federal level, has been to divide the government responsibilities for food risk analysis between two bodies, Health Canada and my department, the Canadian Food Inspection Agency – the CFIA.

To provide a common, consistent and comprehensive means of identifying, assessing and managing health risks, Health Canada has developed a Decision-Making Framework, compatible and consistent with the approach taken by the Codex Alimentarius Commission. This framework stipulates fundamental values and principles of decision-making.

Like Health Canada, the CFIA has developed a Risk Analysis Framework to guide its enforcement, compliance and control processes. For example, Health Canada regularly assesses the effectiveness of the CFIA's enforcement of its food safety standards.

System Integration

Government has a fundamental, but not exclusive, role in health protection, including food safety. Collaboration of all stakeholders in the food continuum (feed manufacturers, primary producers, food manufacturers/operators, government authorities, consumers) is essential to ensure a comprehensive and integrated approach to the availability of a safe and nutritious food supply.

In addition to the work carried out by the Canadian government within the risk analysis framework, the success of our food safety system depends on close working relationships between federal, provincial/territorial authorities, industry and consumers. The various levels of governments collaborate with stakeholders to ensure the integrity and comprehensiveness of the food safety system. Through increased product and process control activities, industry works to achieve and assure food safety standards themselves. Nevertheless, government must retain a strong oversight and intervention role to ensure the safety of the food supply.

An effective food safety system works best when the industry can assure that they have applied prescribed effective food safety measures themselves. To maintain the integrity and credibility of the inspection system, the CFIA maintains strong government certification, compliance and enforcement capabilities. The degree of ongoing government oversight and intervention is a function of each company's history of compliance and the risk associated with the product

Transparency in decision-making and consultation with stakeholders is an integral component of policy development. Wherever possible, we must involve stakeholders in the decision-making process. In Canada's system, communication is vital. Communication between Health Canada and the CFIA. Communication between food safety regulators and industry, between regulators and the consumers. Communication among governments, both internally within Canada and with our international partners.

Canada has bilateral information-sharing arrangements with some other governments. However, at this gathering, we can clearly see the benefits of communications at the international level. I believe WHO has performed a potentially significant service to all of us through the creation of a broad international information sharing system. We saw the INFOSAN demonstration yesterday - a clear example of how technology and organization can be used to respond swiftly to international incidents. This is an important first step.

Risk Analysis In Action

As an example of the application of what I believe to be an effective food safety system, let me say a few words about Canada's response to the discovery last year of BSE.

At the risk assessment phase, both Health Canada and the CFIA monitored the impact of earlier BSE outbreaks in other countries. They kept abreast of scientific knowledge on the nature of the disease, and its implications, both for human health - the responsibility of Health Canada - and animal health - the responsibility of the CFIA.

When the BSE-infected cow was diagnosed in May 2003, our risk management system quickly responded. The CFIA quarantined 18 locations, and conducted trace-back, trace-forward, trace-out and feed investigations. No additional animals associated with this cow were found to be infected. This was very encouraging news. It told us that Canada would not have an epidemic of BSE. It also confirmed the effectiveness of Canada's BSE controls: existing Canadian regulations prevented products from this single infected cow from entering the human food supply.

Canada's policy response was swift. In response to this incident of BSE, Health Canada and the CFIA promptly conducted new risk assessments for food safety and animal health, respectively. Our first risk management concern was to ensure that appropriate measures were instituted to prevent human exposure to the BSE agent. Following completion of risk assessments, Health Canada and CFIA amended regulations to prevent specified risk materials (SRM) from entering the human food supply for both Canadian and foreign consumers. The CFIA has implemented the necessary measure to ensure that SRMs are removed at the abattoir. This is the single most important public health protection measure that we could have taken.

Risk communication was also a fundamental element of our response. Throughout our investigation, we held daily media briefings and dialogues with stakeholders to share information and ensure that Canadians and foreign governments were well informed of the actions being taken. Whenever confronted with the choice of making information public immediately or delaying its release, we went out as soon as we had the information. We erred on the side of transparency.

An International Panel of Experts praised Canada for the speed and thoroughness of its response to BSE. Stakeholders also praised the openness and transparency of our communications.

Canada's response to BSE was effective, in large part, because we followed the decision-making frameworks we have established for emergencies such as this. We have guidelines for science based risk analysis and we followed them. We worked with both our federal and provincial government colleagues as well as industry. We kept our consumers and international partners informed of each new development.

Conclusion

Globalization has increased. Technology has certainly changed, resulting in new challenges for all of us. But we should not lose sight of the overarching principle that our food safety systems must be science-based.

Our regulatory systems must be flexible to adapt to each new challenge. Ultimately, our objective should be to protect the health and security of our citizens by effectively managing risks.

We have an opportunity to respond to these challenges through collaboration and cooperation, the sharing of experiences and ideas and the establishment of best practices. This Forum plays an important role in each of these areas. In each of our countries, food safety systems are in a state of constant evolution in response to new challenges. This week, we have an opportunity to discuss these challenges. We have much to learn from one another. We must keep the lines of communication open. Thank you.

APPENDIX VIII
(Conference Room Document 1B)

SECOND FAO/WHO GLOBAL FORUM OF FOOD SAFETY REGULATORS
Bangkok, Thailand, 12-14 October 2004
Keynote address
By
Mr Stuart Slorach
Chairperson of the Codex Alimentarius Commission

Codex and the Second Global Forum Complement Each Other

Introduction

This presentation is intended to show how Codex activities and this Second FAO/WHO Global Forum of Food Safety Regulators (GF-2) complement each other.

What Codex Does

The Codex Alimentarius Commission (CAC) develops standards, guidelines, codes of practice and related texts in order to protect the health of consumers and ensure fair practices in the food trade. The CAC is an intergovernmental negotiating platform with over 170 members worldwide. Draft standards and related texts developed by Codex Committees and Task Forces are adopted by the CAC and incorporated into the "Codex Alimentarius" - the international food code. This has become the global reference point for consumers, food producers, processors and traders and national food control agencies. Codex standards are explicitly referenced in the World Trade Organization's Agreement on the Application of Sanitary and Phytosanitary Measures (the "SPS Agreement") as the international benchmark for food safety.

Codex standards and related texts

Codex standards and related texts cover a wide range of foods and food safety and quality issues. There are Codex standards on, for example:

- Commodities – fruits, vegetables, cereals, pulses, legumes, meat, fish, milk, fats, oils, sugars, cocoa and products of all these;
- Food labelling (including nutrition labelling) and claims;
- Food additives, contaminants and toxins;
- Maximum residue limits (MRLs) for pesticides and veterinary drugs.

Perhaps of greater interest for this Global Forum, which is focused on strengthening official food safety control services, rapid alert systems and food-borne disease surveillance, are Codex guidelines on, for example:

- Application of Hazard Analysis and Critical Control Point (HACCP) system;
- Food import and certification systems;
- Exchange of information in food control emergency situations and on rejections of imported food;
- Organically-produced foods;
- Methods of analysis and sampling.

In addition there are Codex Codes of Practice on, for example:

- Good animal feeding;
- Prevention and reduction of contamination with aflatoxins and other mycotoxins;
- General principles of food hygiene;
- Hygienic practice for milk and milk products;
- Transport of food in bulk.

Codex and GF-2 Complement Each Other

GF-2 is focused on information exchange and experience sharing on food control services, surveillance of food-borne disease and rapid alert systems. Codex is focused mainly on normative work (developing standards, guidelines, codes of practice, etc.). Codex also promotes mutual exchange of information on problems arising from food control and stimulates the strengthening of food control infrastructures, especially through its regional Coordinating Committees.

Many Codex texts, e.g. guidelines on the application of HACCP systems and on information exchange in food safety emergencies, are of direct relevance for the issues dealt with at this Global Forum. In addition, the process of elaborating Codex standards provides good opportunities for representatives from countries around the world to exchange information and share experience on many different current food safety issues. There is a strong emphasis consensus in decision-making in Codex. This Global Forum should facilitate consultation and dialogue among food safety regulators outside the negotiating arena, thus facilitating consensus building and smoothing the negotiation process.

Risk analysis and food safety

Codex working principles for risk analysis recommend a structured approach to food safety problems, comprising three distinct, but closely linked, components – risk assessment, risk management and risk communication. Both Codex and this Global Forum are focused mainly on the risk management and risk communication components.

Scientific basis for Codex standards

Codex has long recognized the importance of basing its food safety standards on a sound scientific foundation. The risk assessments on which Codex standards are based are provided by independent FAO/WHO expert bodies, such as the:

- Joint FAO/WHO Expert Committee on Food Additives (JECFA) – food additives and contaminants, veterinary drug residues;
- Joint FAO/WHO Meeting on Pesticide Residues (JMPR) and
- Joint FAO/WHO Expert Meetings on Microbiological Risk Assessment (JEMRA).

There is a need to consider broadening the scope of the expert bodies to cover new areas, such as risk-benefit evaluations, nutrition-related issues and emerging risks. A review of the provision of scientific advice to Codex and Member States is in progress and emphasis is placed on the need for a high level of scientific competence, independence, openness and transparency and adequate developing country participation.

Codex standards: national legislation and international harmonization

Codex standards and related texts are used as a guide to countries in developing their own legislation. This can result in substantial savings in time and money. In addition, national measures based on Codex standards are deemed necessary and thus in compliance with the SPS Agreement.

Codex standards play an important role in the worldwide harmonization of food safety and quality standards and regulations, thus facilitating international trade in food. Both the SPS and TBT (Technical Barriers to Trade) Agreements require signatory countries to base their legislation on the work of international standard-setting bodies. Codex is the main player in the food area.

Whole food chain perspective

Food safety can best be achieved by considering the food chain as a whole ("Farm-to-table approach") and safety and quality cannot be" inspected into" food at the end of the chain. In recent decades there has been a shift from end-product control to HACCP based control of food production, processing and distribution and systems auditing. Codex places emphasis on the preventive approach to food safety, including the need for Good Agricultural, Veterinary, Manufacturing and Hygienic Practices.

Cooperation between Codex and other organizations

Codex has a mandate to promote coordination of all food standards work undertaken by international governmental and non-governmental organizations and has established contacts with many such organizations, for example OIE, IPPC, ISO and IAEA. This is important in order to avoid duplication of effort and gaps in dealing with food safety issues. Codex is currently exploring ways and means to work more closely with OIE in dealing with problems of mutual concern, such as antimicrobial resistance.

Improving Codex

FAO/WHO carried out an evaluation of Codex food safety activities in 2002 and many of the recommendations from that evaluation to make Codex work faster and more efficiently have been, or are in the process of being, implemented. In addition, a Codex Trust Fund, to provide funds to enable greater participation from developing countries in Codex activities, has been launched and is now operational. A Training Package for enhancing participation in Codex activities is nearing completion and will be demonstrated on 14 October in the ESCAP Hall.

Some questions for discussion

As Chairperson of the Codex Alimentarius Commission, I would very much appreciate it if, during this Forum, you could consider the following questions:

- Are current Codex standards and related texts in the areas covered by the Forum adequate?
- Are there further areas where Codex standards, guidelines, codes of practice, etc. should be developed to improve food safety and ensure fair practices in the food trade?
- How can Codex and GF-2 help to build better food safety systems in countries in different stages of development?

Active participation in GF-2

This Global Forum provides a golden opportunity to exchange information, share experiences and learn from others about establishing and running food safety, food-borne disease surveillance and rapid alert systems. I hope that all participants will take an active part in the

Forum – tell us your success stories, but also the special problems you have to deal with. In these times of increasing international trade in food and international tourist travel it is important to discuss with countries that you rarely have contact with – remember their problems today may be yours tomorrow! In connection with the conference a number of side-events have been arranged, which I hope as many as possible of you will attend to get information on important new developments related to the theme of this Global Forum.

APPENDIX IX

Agenda Item 4 GF 02/3

SECOND FAO/WHO GLOBAL FORUM OF FOOD SAFETY REGULATORS
Bangkok, Thailand, 12-14 October 2004

STRENGTHENING OFFICIAL FOOD SAFETY CONTROL SERVICES
(Paper prepared by the FAO/WHO Secretariat)

Introduction

Food safety is a major element of public health and an important determinant of food trade. It involves a number of stakeholders, including primary producers, food handlers, processors and traders along the food chain, official food control services, and consumers. The official food control services play a key role in ensuring that food is safe and suitable for human consumption. They also have an impact on the organization and activities of other stakeholders.

The role of official food control services must be analysed within the framework of a national food control system, the elements of which are presented in the first part of this paper. Different types of existing organizational structures of official food control services are described and discussed. Next, the paper explores ways to improve the management and effectiveness of official food control services. Finally, the paper discusses some specific issues related to food control services in developing countries.

Some important issues which have been selected as subjects of specific topic papers will be only briefly mentioned in this paper.

1. ELEMENTS OF A NATIONAL FOOD CONTROL SYSTEM

While the components and priorities of a food control system will vary from country to country, most systems will typically comprise the following components.

1.1 Food law and regulations

The development of relevant and enforceable food law and regulations is an essential component of a modern food control system. To the extent possible, modern food laws not only contain the necessary legal powers and prescriptions to ensure food safety, but also allow the competent authorities to build preventive approaches all along the food chain.

In addition to food laws and regulations, governments need updated food standards. They should take full advantage of existing Codex standards, guidelines and recommendations and of food safety lessons learned in other countries. They must tailor available information, concepts and requirements to the national context, so as to develop a regulatory framework that will both satisfy national needs and meet international obligations and trading partners' demands.

The efficiency of food safety official and non-official control depends on the pertinence of the food law and regulations. This subject will be discussed under Agenda Item 4.2 - Topic paper 1.2 presented by South Africa (GF 02/5a).

1.2 Food control management

Effective food control systems require policy and operational co-ordination at the national level. They would include the establishment of a leadership function and administrative structures with clearly defined accountability for issues such as:

- the development and implementation of an integrated national food control strategy;
- operation of a national food control programme;
- securing funds and allocating resources;
- setting standards and regulations;
- participation in international food control related activities;
- developing emergency response procedures;
- carrying out risk analysis, etc.

Core responsibilities include:

- establishing regulatory measures;
- facilitating continuous improvement; and
- providing overall policy guidance.

1.3 Official control services (inspection services)

While the responsibility for the supply of safe food is shared by all involved in the production, processing and trade along the entire food chain, the official control services are responsible for the enforcement of food safety legislation. By inspecting food, premises and processes, they prevent the trade of unsafe food.

The food inspector is the key person who has day-to-day contact with the food industry, trade and often the public. He must be qualified, trained, efficient and honest. The training of staff of official food safety control services will be discussed under Agenda Item 4.3 - Topic paper 1.3 presented by France (GF 02/6).

As modern food control systems have shifted from removing unsafe food and punishing responsible parties after a problem has occurred, towards a preventive approach, industry and trade should develop and implement in-plants control based on HACCP to the extent that capacity, experience and resources permit. This leads food inspectors to foster the implementation of HACCP and to conduct risk based audits. This subject will be discussed under Agenda Item 4.4 - Topic paper 1.4 presented by Thailand (GF 02/7).

The responsibilities of the official food control services also include inspection, sampling and certification of food for import/export control. This matter will be discussed in detail under Agenda Item 4.5 - Topic paper 1.5 presented by India and the USA (GF 02/8a and 8b).

1.4 Laboratory services: Food monitoring and epidemiological data

Laboratories underpin decisions of food control services. Besides, their analytical results are often used as evidence in court law or in dispute between exporting and importing countries. Therefore, they must ensure that their analyses are performed in an effective and efficient way. This depends in particular on the equipment available, the qualification and skills of the analyst and the reliability of the method used.

Furthermore, it is essential that effective linkage be established between food control laboratories and the public system. In this way, information on food-borne diseases may be linked to food monitoring data, and lead to appropriate risk-based food control policies.

1.5 Information, education, communication and training

An increasingly important role for food control systems is the delivery of information and advice to stakeholders across the farm-to-table continuum. These activities include:

- the provision of balanced factual information to consumers;
- the provision of information packages and educational programmes for key officials and workers in the food industry;
- development of train-the-trainer programmes;
- provision of reference literature to extension workers in the agricultural and health sectors.

2. ORGANIZATIONAL STRUCTURE FOR NATIONAL FOOD CONTROL SYSTEMS

Given the wide scope of food control systems, there are at least three types of organizational arrangements that may be appropriate at the national level. The system may be based on:

- multiple agencies responsible for food control;
- a single and unified agency for food control;
- a national integrated approach.

2.1 Multiple agency system

In this case, sectoral initiatives have resulted in the establishment of separate food control activities by different agencies responsible for the various sectors, such as meat and meat products, fisheries, fruits and vegetables. In the same country, they may come under different government ministries, such as health, agriculture, commerce, environment, trade and industry, tourism, and the roles of each of these agencies are specified but quite different.

(a) Drawbacks of multiple agency system

A system in which several agencies are involved in food safety control usually leads to a duplication of regulatory activities, affecting negatively the efficiency of the system. In addition, it may also result in:

- lack of consistency of regulations between different sectors, such as level of hygienic provisions not directly related to the level of risk;
- frequent confusion over jurisdiction and resultant inefficiency in performance;
- gaps in the coverage of food safety control activities.

In general there is a lack of co-ordination at national level and subsequently at the level of the different bodies involved in food policy monitoring and control of food safety. Thus, in one food-producing establishment, food safety aspects may be controlled repeatedly by different agencies, while another establishment remains unknown by control services.

Furthermore, even if food safety is a predominant objective of each agency, most of the agencies have other responsibilities which may compete in terms of resources and priorities with food safety programmes. Examples of such additional responsibilities include:

- protection of the consumer against fraudulent practices; control of weights and measures, etc.
- control of all consumer goods, in addition to food;
- control over pharmaceutical products, in addition to food;
- responsibility for the development of the food sector;
- prevention of food losses and conservation of natural resources;
- promotion of export trade.

Achieving the necessary balance between food safety control and other responsibilities can be difficult, but not impossible.

(b) Strengthening multiple agency systems

Despite the above drawbacks and for various historical or political reasons, many countries have maintained these multiple agency systems and introduced important improvements to increase their efficiency.

- **Sharing responsibilities**

The first step towards improvement is the development of a national food safety strategy. Within this framework, the responsibilities and tasks of different agencies must be defined. This matter will be discussed in detail under Agenda Item 4.1 - Topic paper 1.1 presented by Ireland (GF 02/4).

It is essential to determine which aspect of food safety control each agency is in charge of, keeping in mind the need to cover all stages of the food chain and within each stage, different aspects of food safety control.

The food chain includes production of food of plant and animal origin, post-harvest treatment, processing and handling of food at wholesale, retail and household levels. All these elements must be covered, although the activity of the agencies at the household level is limited to consumer information and education. Control of each of these stages implies control of important related fields. For example, control of food of animal origin implies control of animal health, in particular zoonoses, of feed and of veterinary medicine.

If all controls at the level of an establishment cannot be carried out by a single agency, it is important to clearly determine which control is done by which agency; for example, at a meat processing plant, which agency will be responsible for the control of:

- prior approval of the establishment, if needed;
- hygiene of premises, equipment, staff and handling;
- health of worker;
- water suitability;
- finished goods, etc.

While overlapping is sometimes inevitable, it is essential to ensure that such overlapping is minimal and, more importantly, that there are no gaps in the coverage of the control system.

Once determined in the food safety strategy, the responsibilities of the various agencies must be clearly defined in the legislation, as well as in the administrative and penal competence of their respective inspectors.

- **Intra-agency co-ordination**

Agencies that are also entrusted with missions other than food safety control, must clearly determine their objectives in each field as well as the means they allocate to each mission. People in charge of food safety in the agency need to know the resources available to them in order to organize their activities.

Where there may be conflict of interest between food safety control and another responsibility of the agency, these two activities have to be well identified and separate in the organizational chart. Procedures are drawn up in order to avoid that any decisions on food safety are altered by considerations that may be legitimate, but that challenge the human health objective.

The consequences of conflict of interest also have to be addressed in a longer-term. Staff working in food safety control should not run the risk of endangering their chances of promotion due to the negative effect of their decision on another objective of the agency, such as promotion of a food sector or export trade.

- **Inter-agency co-ordination**

All agencies involved in food safety control in a country should co-ordinate their activities. Even outside an integrated system there can and must be some co-ordination among agencies at least in fields where there is a sharing of responsibilities. Some agencies may decide to co-ordinate their activities on a particular part of the food chain. This should be formalized by a document that the staff of the concerned agencies are informed of.

It is vital that agencies in charge of public health and food safety monitoring programmes exchange their data. Food monitoring data are necessary for the understanding of the epidemio-surveillance of food-borne diseases, and results of the epidemio-surveillance have to be taken into account in setting up food monitoring programmes.

Where the food control system is fragmented among state and local bodies, the concerned agencies should exchange information on approaches and experiences to harmonize their intervention so that consumers receive the same level of protection throughout the country.

2.2 Single agency system

(a) Advantages

The consolidation of all responsibilities for protecting public health and food safety into a single food safety agency, with clearly defined terms of reference, has considerable merits. The benefits include:

- harmonization of food standards, and uniform application of protection measures at all the links of the food chain;
- ability to act quickly and consistently at all the concerned links of the food chain in order to efficiently protect consumers, respond to emerging challenges and the demands of the domestic and international marketplace;

- improved cost efficiency and more effective use of resources and expertise;
- provision of more streamlined and efficient services, benefiting industry and promoting trade.

(b) Competence scope

Whereas the idea of a single agency system is quite appealing, it is unrealistic to recommend a single organizational structure that will universally meet the requirements and resources of every country's socio-economic and political environment. The decision has to be country specific and all stakeholders should have the opportunity to provide inputs into the development process.

A single unified agency for food control is firstly a risk management body. Nevertheless, it may be interesting to also entrust it with risk assessment and/or risk communication functions. Risk assessment (especially in a proactive manner) and risk communication can be more mutually supportive. Indeed, this may:

- facilitate communication between risk assessors and risk managers - they both will share the same perception of actual and potential risks, risk assessors could acquire an immediate knowledge of the signals originating from the inspectors in the field;
- improve the consistency of activities in risk assessment, management and communication.

On the other hand, a single agency system pools staff and resources which permits a more efficient and less costly management.

However, it is important to keep in mind that risk assessment must be carried out by independent experts in a functional framework where risk assessor and risk manager tasks are clearly separate. Therefore, within the single unified agency, risk assessment must remain distinct from risk management in terms of functionality and responsibility.

Food safety risk management includes different activities from defining standards to enforcing them. While enforcing standards is typically the task of a food control agency, the level at which this agency is involved in the setting of standards requires careful consideration.

Food safety control is often related to several other fields of control; one of the main issues is to determine the limits of the food safety control agency's competence. As food quality is closely related to food safety, the agency is also obviously responsible for food quality control. However, food quality includes a number of aspects, such as ingredients, nutritional value, additives, labelling, organic food, marks of quality, protected geographical indication, etc. and it is important to clearly determine the role that the agency may have in food quality control.

Depending on the country situation and priorities, food safety and quality control may benefit from synergies with control of plant protection, animal health (beyond zoonoses) and welfare, feedstuffs, veterinary medicine, and other non-food products. In this case, the inclusion of some of these fields in the agency competence should be considered.

2.3 Integrated system

An integrated food control system is a halfway mark which warrants consideration where there is desire and determination to achieve a consistent and co-ordinated approach across the-farm-to-table continuum without merging all the agencies concerned. Typically, the organization of an integrated food control system would have several levels of operation:

- Level 1: Formulation of policy, development of standards and regulations;
- Level 2: Co-ordination of food control activity, monitoring and auditing;
- Level 3: Inspection and enforcement;
- Level 4: Communication, education and training.

In reviewing and revising their food control system, governments may wish to consider a model which calls for the establishment of an autonomous national food control agency which is responsible for activities at Levels 1 and 2, with existing multisectoral agencies retaining responsibilities for Levels 3 and 4. The advantages of such a system include:

- coherence in the national food control system with uniform application of control measures across the whole food chain throughout the country;
- politically more acceptable as it does not disturb the day-to-day inspection and enforcement role of other agencies;
- better equipped to deal with international dimensions of food control such as participation in work of Codex, follow-up on SPS/TBT Agreements, etc.;
- encourages transparency in decision-making processes, and accountability in implementation; and
- is more cost-effective in the long term.

The role of such food control agency is to establish national food control goals, and put into effect the strategic and operational activities to achieve these goals. Other functions may include:

- commissioning of food safety risk assessment;
- revising and updating the national food control strategy;
- advising relevant ministerial officials on policy matters, including determination of priorities and use of resources;
- supporting research and development;
- developing consumer education.

3. MANAGEMENT OF FOOD SAFETY CONTROL SERVICES

The efficiency of food control services depends very much on the way in which they are managed. This, in turn, is a reflection of the professionalism of the staff involved, the legal framework in which they operate and the means available to them to perform their duties. This paper will deal only with the management side; the other aspects will be covered in the following topic papers.

The basic function of food control services consists of inspection and control. This represents a huge number of punctual checks of many kinds of items by many different people, and in different part of the country. The management team has to organize these scattered activities to improve their consistency and efficiency. Management of inspection and control implies:

- harmonization of tasks;
- planning and programming;
- preparation of administrative documents;
- monitoring of activities and situation; and
- crisis management.

3.1 Task definition and harmonization

The results of an inspection depends much on the way it is carried out. In order to ensure the same level of consumer protection all over the country and to avoid distortion among establishments in the impact of regulatory disposition, it is necessary to harmonize the conducting of the inspection and control.

(a) Harmonized procedure of inspection and control

In the absence of a well-defined procedure, the inspector will carry out inspection and control in the way they think most appropriate, but in fact this is done in various ways. The inspectors must follow a defined procedure that covers all aspects of the requirement in an appropriate and balanced way, using means proportionate to the objective. The procedure should include preparation of the inspection, documentary check, visit of the establishment, debriefing of the establishment manager or his representative, a written report, and subsequent follow-up.

The advice issue is important. Control officers are often the only available persons the establishment manager can ask for advice and officers should be willing to provide it. However, advice and control are distinct missions that are often incompatible, insofar as one of the requirements of control is its independence.

Concerning monitoring plans, the results of food analysis and their interpretation are very dependent on the way in which the controller carries out the sampling, with regard to the technical condition, as well as the choice of samples so that they give a representative image of the inspected product. Therefore, all sampling programmes must be accompanied by detailed instructions for the official in charge of taking the sample and for those in charge of analysing them.

(b) Harmonized appraisal and follow-up

Food hygiene regulations contain expressions such as in "hygienic way", "adequate", "in good repair", "detailed documentation", "regular examination" etc. Checking compliance with requirements put into these words, may be quite subjective. Moreover, experience shows that, in practice, even where regulation uses precise terms, there are often differences in their interpretation by inspectors. This may be related to the inspector's former experience or concomitant activities, or the local context. For example, an inspector in charge of the control of different kinds of establishments will not judge a poultry slaughterhouse in the same way as an inspector specialized in this kind of abattoir; and a food processing plant may be judged leniently because it is situated in an area where the hygienic level of the establishments is generally low. Therefore, it is important to provide inspectors with clear instructions as to what is required and how it can be appraised.

Inspection of a food establishment results in a decision of the food control services, which usually addresses the shortcomings. It determines the corrective measure(s) that must be taken and its/their timeframe. It may sometimes involve legal proceedings. Harmonizing follow-up is essential to ensure fair treatment of all stakeholders.

(c) How to harmonize

Traditional means of harmonizing the working habits of staff includes circulation of instructions on the way to apply and enforce various regulations or vade mecum, which clarify or justify requirements. These guidelines should not be considered as added new requirements, but merely as means to explain how to apply and enforce requirements already in force.

Professional training, both initial and continuing, is also a decisive element of an adequate and harmonized enforcement of regulation by official services.

In addition, more participative means can be used to further enhance harmonization, such as identification of suitable experts, meetings and working visits to the field.

In general, there are among the inspectors of any agency some who are specialised in inspecting specific types of establishments or to carry out well defined tasks, and have become very competent in their fields of work, i.e. experts with very valuable practical experience. Other inspectors in the agency should take advantage of this expertise. The management must identify these "practical" experts and entrust them with harmonizing control practice by preparation of guidelines and participation in training.

Another interesting means of harmonization consists of enabling controllers from different units to share their field experience within the framework of meetings dedicated to the harmonization of practice in a specific field. Such meetings may result in drafting guidelines or vade mecum.

Sharing experience can also take place in the field when inspectors from different units pay a working visit to an inspection team in an establishment it is in charge of. This may be an opportunity for reviewing and revising local control practice.

It is important to note that each of these means of harmonization can be applied at local and national level as well as at regional level in the framework of international co-ordination.

3.2 Programming

Food control agencies/authorities have many regular controls to carry out, often with a limited number of staff. Whereas the problem of lack of resources is often put forward, the question of using existing resources more efficiently is always a challenge. One of the main problems is how to allocate available staff time and work means to the different tasks entrusted to the agency/authority, on the understanding that it should be done based on risk analysis.

(a) Determining priorities

These tasks stem from the legal obligation of control, as well as priorities determined by the competent authorities, which must take into account:

- public health objectives and results of the epidemio-surveillance of food-borne diseases - control will stress food and types of establishments blamed for outbreaks;
- outcome of the previous control - control will stress food and type of establishment on which numerous and important shortcomings have already been reported;
- origin of imported products - products likely to cause contamination because of the sanitary situation or deficiencies of control authorities in the country of origin will be checked more systematically and thoroughly;
- main export products - their control has to give trust to importing countries.

The determination of priorities should involve all stakeholders, both public and private, in order to match the actual needs of the country. Agency management must make field staff aware of the priorities, particularly prior to periodic planning of their activities.

(b) Inventory of tasks

The control agency should draw up an inventory of the tasks and evaluate the work time each task requires, taking into account that some tasks can be undertaken together.

Inspection of establishments and food contamination monitoring underpin food control activities, but as food contamination monitoring is discussed under Sub-theme 2, the rest of this paper focuses on establishments. Each inspection unit should have an exhaustive list of the establishments and sites that it is likely to control, and headquarters should have statistics on the different kinds of establishments the different units are in charge of.

(c) Risk classification of establishments

Establishments and sites should be inspected regularly and where shortcomings are suspected. In the framework of risk management, the frequency of inspections for a given establishment should match the risk it represents. The different kinds of establishments can be divided into a limited number of risk groups, based on handling undergone by food. It is mainly related to microbiological risk.

Although it seems possible to consider *a priori* that some products are riskier than others and set a classification on this basis, this classification should rather be adapted by countries according to the information given by epidemio-surveillance of food-borne diseases and the local context. For example, in many countries appertized canned food is deemed very safe, while in other countries some establishments do not perfectly control this technology.

In addition, competent authorities can estimate the average time required by inspection of the various types of establishment on the basis of the different checks included in the inspection and of the country's experience.

Knowing the number of establishments of various kinds each unit is in charge of, and the time their inspection requires, the manager of the agency is in a position to determine on an objective basis how staff should be divided between the different units according to their workload.

Subsequently, the director of local services should refine the risk level of each establishment, taking into account the number and skill of staff in the establishment, the production volume, involvement in quality assurance, as well as the outcome of former inspection and possible blame for a food intoxication outbreak. Accordingly, he will adapt the control rate to risk level of establishments.

Control programming does not set a deadlocked situation; it is a dynamic process that takes into account development of the context and incoming requests from authorities.

3.3 Administrative documents

It is important that the necessary instructions and report accompany all control activities. Beyond the actual transmission of a message, the written form should ensure that:

- the responsible person is identified insofar as it signed;
- all the addressees receive the same information and can make reference to it;
- information is recorded and classified; it can be traced and used in subsequent studies or investigation.

Control instructions should always indicate at least the order sender, the officer that has to carry out the control, the legal basis, the exact tasks to be carried out, the timeframe in which they have to be accomplished, as well as the way of giving an account of the control.

All inspections should result in a report of the findings since without a report it is not possible to follow-up and monitor the results.

Furthermore, such documents are essential for the agency, as they are the basic elements by which it can demonstrate the effectiveness and the efficiency of its activities. Traditionally, the control agency is requested to give an account of its activities to the government. Nowadays, in order to match transparency requirements, it should also provide all stakeholders with objective information on the performed control and its result.

3.4 Monitoring

Monitoring is a necessary task at each hierarchical level which consists of verifying that instructions have been clearly understood and carried out, and comparing performed to planned control. Whereas analysis of reports is the basis of monitoring, the competent authorities should consider further means.

At the field level it is sometimes useful to have officers accompanied by an expert or a superior, who may identify difficulties in the implementation of instructions.

The agency management also has to monitor the way its decentralized units run their missions in order to ensure that its instructions are correctly carried out and there are neither drifts nor differences among units. Besides periodic reports, some agencies use senior officers whose mission is to audit on-the-spot the activities of local units, whether it is on the implementation of technical instructions or the staff and financial management.

3.5 Crisis management

Food control services must be able to react rapidly and efficiently, if a major problem arises. Firstly, it means that they must be informed as early as possible of the problem before it spreads. Rapid alert systems will be discussed under Sub-theme 2. Then when informed, they have to very quickly take appropriate measures. This implies that these measures have be planned as far as possible within the framework of an emergency plan, with standing orders and various scenarios indicating the means allocated to each task.

These measures affect a number of stakeholders, who will respond effectively as they are confident of the efficiency of control services and have been involved in the preparation of the plan. It means that a good risk communication with all stakeholders well before the crisis will facilitate its management.

4. SPECIFIC ISSUES OF DEVELOPING COUNTRIES

4.1 Basic infrastructure

In many developing countries inadequate facilities and infrastructure undermine food safety systems. Control services should identify and draw competent authorities' attention on the necessary improvement of basic infrastructure relevant to food safety, such as safe water supply, electricity, storage facilities including cold storage, transport facilities and network.

4.2 Food processing industry

Food production, processing, and marketing is often highly fragmented among a large number of small producers and handlers who lack appropriate knowledge and expertise in the application of modern agricultural practices and food hygiene that match agricultural intensification and increasing urbanization. Control services should encourage these stakeholders to get organized, and participate in the determination of their training needs.

Besides multiple small producers and shopkeepers, food-processing industries often include large facilities, some of which are sophisticated. Therefore, control services have to be able to deal efficiently with a large range of very heterogeneous establishments and have to adapt their way of working to technical and financial capacity of each category, taking into account the risk related to their market and without neglecting any fragment of the food industry.

Food export is vital for many developing countries; in general it concerns a limited number of products. In the long run, "dual safety standards" for exported and domestically consumed products, respectively, are not desirable, but they are likely to persist for some time. Therefore, it is appealing to concentrate control means on the export field while neglecting control of the national market, which penalizes national consumers. On the contrary, control services should use experience gained in export plants and at the contact with importing country control services, in order to improve the efficiency of the national food control system. For example, they can see how establishments closely related to foreign customers implement good hygienic practice and HACCP, or the procedure followed by importing country control services for inspection. Insofar as this seems relevant, they can consider the extent to which it could be used in establishments limited to the local market. From this perspective, if inspectors in charge of export control are specialized in this task, it is important that they remain in touch with inspectors in charge of local market control.

4.3 Street food

Due to rapid urbanization, a large proportion of the urban population depends partly or entirely on street food, which include ready-to-eat foods and beverages in streets or public places such as around the workplace, schools, hospitals, railway stations, and bus terminals. These foods are generally prepared and sold in unhygienic conditions, with limited access to safe water, sanitary services, or garbage disposal facilities.

Control services should draw local authority's attention to the necessity to provide street food sectors with adequate basic infrastructure. Furthermore, they should encourage the development of specific and adapted guides of good hygienic practices, and where needed, HACCP, and enforce their actual implementation.

4.4 Food control infrastructure and resources

Food control services often suffer from shortage of funds; this may be particularly visible in laboratory equipment and working means, but also shows its effects in recruitment and training of qualified staff. These limited resources call for an emphasis in the organization and management in order to streamline and optimize the use of available means. Sections 2 and 3 of this paper have presented different ways of improving the food control service and to demonstrate the good use of funds to decision-makers.

The controlling authority should be adequately resourced, and be independent of the management of the establishment and other industry interests, as the Codex Alimentarius states. Food safety control concerns human health and safety, and therefore falls under the responsibility of the government. Nevertheless, delivering safe food comes firstly under corporate responsibility, and food control allows food industry to take its responsibility. That is why in developed countries establishments producing or handling food are asked for covering control cost, in a way that does not undermine controller's independence. Cost recovery options include fees for licensing, inspection activity, and food analysis. In developing countries, this should be managed carefully as any costs passed directly onto the food industry will ultimately be passed onto consumers as an indirect tax on food, and this falls disproportionately on poorer sectors of society. This qualification applies only to food put on the local or national market, while the export field is supposed to cover control costs.

4.5 Technical assistance

The need for technical assistance in strengthening food control systems in developing countries is well recognized. FAO and WHO are the two main specialized agencies of the United Nations involved in food quality and safety technical co-operation programmes with developing countries.

Both the SPS Agreement (Article 9) and the TBT Agreement (Article 11) specifically refer to the need to provide technical assistance to developing countries. In particular, developed countries which import food from developing nations are required, upon request, to provide technical assistance to the developing exporting countries to enable them to meet their SPS and TBT obligations in international food trade. As this new opportunity to access technical assistance under the WTO Agreements has not yet been fully utilized by developing countries, it should be discussed among other vehicles at the Workshop on Partnership.

Conclusion

1. Strengthening official services for food safety control is part of a strategy that affects all elements of the national food control system; which includes food law and regulations, food control management, laboratories, information, education, communication and training.

2. The national food control system may be based on multiple agencies, a single agency or an integrated approach; cultural, economic, and political conditions of the country will determine the appropriate model to be followed. Whatever the considered model, a thorough review must be carried out to determine how control activities can be coordinated, to prevent gaps or conflicts, and to explore possible synergies with other related controls (plant protection, animal health, biosafety). In any case, food safety control systems must cover efficiently and consistently all components of the food chain.

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3. The management of food control services should ensure that their staff carry out control with technical and legal competence, and independence, in a harmonized way all over the country. They should also ensure that the available means are judiciously allocated by programming, that the control activities are supported by relevant documents and monitored, and that the services are ready to face crisis.

4. In developing countries, food control services should be adequately resourced and strengthened to play a decisive role in protecting consumer's health and supporting the food export trade. They should participate in the organization and training of small producers and handlers, in particular for street food, and address the dualism between export and local market. FAO, WHO, other concerned agencies and donor countries are called upon to assist developing countries in strengthening their food control services.

Agenda Item 4.1 GF 02/4

SECOND FAO/WHO GLOBAL FORUM OF FOOD SAFETY REGULATORS
Bangkok, Thailand, 12-14 October 2004

Defining the responsibilities and tasks of different stakeholders within the framework of a national strategy for food control

(Paper prepared by Alan Reilly, Deputy Chief Executive, Food Safety Authority of Ireland)

Introduction

Over the past few decades the issue of food safety has been in the public eye as never before. A chronology of food scares has damaged consumer confidence in the safety of food, has raised doubts about industries' commitment to produce safe food and has raised questions regarding the ability of the regulatory agencies to police the food chain. In the past the emphasis of food control systems was placed on the stimulation of trade and commerce. More recently that balance has moved to ensuring foods are safe and consumers' interests are protected. The responsibility for food safety is shared among all stakeholders involved in the production and marketing of foods. To ensure consumers' health and consumers' interests are adequately protected, the co-operation of many organizations and individuals both in the regulatory agencies and in the food industry is required. Consumers also have their own part to play in choosing healthy diets and ensuring hygienic handling and proper cooking of food to protect their own and their family's health.

The concept of a national strategy for food safety control has gained prominence in recent years in many countries worldwide. It has become a realization that effective food control at national level can be undermined by the existence of fragmented legislation, multiple jurisdictions, and inconsistencies in enforcement and weaknesses in food surveillance and monitoring. Many possible options exist as to how food safety controls can be organized at national level. Guidelines have been produced by Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO) that provide advice to national authorities on strategies to strengthen food control systems to protect public health, prevent fraud and deception, avoid food adulteration and facilitate trade (FAO, 2003). These guidelines can facilitate the development of national policies for choosing the most suitable options for their food control systems in terms of legislation, infrastructure and enforcement mechanisms. A national strategy enables a country to develop an integrated and effective food safety control system and to determine consumer protection priorities and promote economic development.

There are many stakeholders involved in ensuring the safety and quality of foods moving in both national and international trade. Responsibilities are shared by national governments, farmers, food processors and manufacturers, food retailers, caterers and consumers. A positive interaction is required between all of these players if the system is to be successful.

This paper attempts to describe the responsibilities and tasks of the different stakeholders within the framework of a national strategy for food safety control.

Integrated controls from farm-to-fork

The food chain has become more complex in recent years with increasing liberalization of trade and expanding global distribution of food and feed. Meeting the requirements of trade agreements such as the World Trade Organization's Agreement on the Application of Sanitary and Phytosanitary Measures (SPS) and the Agreement on Technical Barriers to Trade (TBT) is essential for countries wishing to have access to international food markets. Countries are now obliged to demonstrate that food safety measures provide appropriate public health protection and are not unnecessarily restrictive to trade. The ability to demonstrate adequate national food controls are in place at all stages of production, processing and marketing is also necessary to remain competitive in the international market. There are many links in the chain which is only as strong as its weakest link. Integrated controls are required at all stages of production and in all sectors in line with the "farm to fork" principle. The introduction of the "farm-to-fork" principle to food control allows the creation of a systematic, comprehensive system covering all food in all sectors, replacing the current sector specific, patchwork of rules. Experience both at national and international level, has shown that in order to ensure consumer protection it is necessary to consider all aspects of the food production chain as a continuum, from and including primary production up to and including sale or supply of food to the consumer because each element may have a potential impact on food safety.

In recent years the concept of integrated controls across the food chain has expanded from national level to regional trading blocks, such as those of the European Union (EU 2004), Australia and New Zealand, North American Free Trade Agreement (NAFTA), Asian Free Trade Association (AFTA) and the Gulf Cooperation Council (GCC). The intent is to achieve sufficient uniformity such that food businesses do not have to comply with different consumer protection regulations and standards when trading across borders. The most effective method of demonstrating harmonized controls is to ensure that regulations are based on sound science and are consistent with the international standards developed by the Codex Alimentarius Commission.

Responsibilities for food control at government level

National governments have the overall responsibility for food safety policy and for ensuring that adequate resources are allocated for food safety control. For successful implementation, a national food control system must have support at the highest level of government. In reality the responsibility for food control in many countries is shared between different agencies or ministries. The roles and responsibilities of these agencies or ministries may be quite different and duplication of regulatory activity, fragmented surveillance and a lack of coordination are common. There may also be wide variations in expertise and resources between the different agencies or ministries, and the responsibility for protecting public health may conflict with obligations to facilitate trade or develop an industry or sector. Additionally responsibilities may be shared between central and local government, with central government having more of a policy role and local government enforcing regulations.

The key responsibilities at government level are for the development of food laws and regulations that will facilitate integrated controls across the food chain; ensuring the infrastructure exists for the effective management of official controls; ensuring officers in the food inspection service are qualified and adequately trained; and that an official laboratory network exists to monitor the food chain and to support the food surveillance and food-borne disease surveillance networks.

Box 1

Key responsibilities for national governments are that:

- Food safety control policies address the central issues of protecting consumers' health and consumers' interests; and facilitating trade;

- Adequate resources are available for the operation of an effective and efficient food control system;
- Systems are in place for coordination and integration of food control policies within central government departments;
- Legislation exists for adequate cooperation between central and local government agencies;
- Food legislation clearly identifies and limits the functions, authority and activities of statutory food control agencies;
- Food regulations, standards and codes of practice are risk based and are harmonized with international requirements;
- Structures are in place for the effective management of food inspection services;
- Risk management decisions are based upon risk assessment and sound science;
- An official food laboratory exists to support food monitoring and surveillance;
- Effective risk communication structures are in place.

- ***Food laws and regulations***

Food laws are the set of legal rules governing the growth, production, harvesting, processing and sale of food. An effective food control programme must be based on appropriate food law that prioritizes food safety and consumer protection. Such laws should be sufficiently flexible to meet the needs of a changing food sector, the introduction of modern technology and the development of new food products. While food laws have been traditionally concerned with the introduction of a control system to address problems of food quality and contamination and to protect the consumer against fraud, it is now widely recognized that there is a need to pay greater attention to the safety of consumers. As a consequence, there is a worldwide trend to move away from detailed, compositional, commodity-based (or "vertical") requirements and place more emphasis on risk analysis and on "horizontal" food safety standards that can apply to many or all foods. Where once the focus was on food hygiene, such as in slaughter houses or dairies or on adulteration of food with harmful substances, the focus has now extended to deal with a myriad of issues including natural contaminants, flavours, additives, labelling, food composition, nutrition, food supplements, genetic modification as well as the traditional food hygiene issues. Also in recent years there has been a growing trend for food law to take into account broader issues such as animal health, welfare, plant health and the environment. In addition to basic legislation, governments require up-to-date and internationally accepted food standards, such as those of the Codex. The FAO and WHO have published guidelines for the development of a national food law (FAO/WHO, 2003). Many examples of food laws exist, both at national and regional level (Table 1).

- ***Management of official food controls***

A clear responsibility at national level is for coordination and collaboration between all government agencies to ensure the effective operation of a food control system. It is important that food legislation clearly identifies the role of each agency to avoid duplication of effort and to bring about a measure of coherence among them. Where the competence to carry out official controls has been delegated from central level to a regional or local level, effective and efficient coordination between all levels must be ensured. Within the context of integrated food controls from "farm-to-fork" many countries are re-evaluating how they manage their systems of food control. The current trend in developed countries is to establish food safety agencies with the view towards coordinating official controls. This practice has not been so widespread in developing countries.

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Box 2

Core responsibilities in the management of official food controls include:

- the establishment of regulatory measures;
- consistency of enforcement;
- use of a risk based approach to determine priorities for action;
- monitoring and verifying system performance;
- facilitating continuous improvement;
- development of codes of best practice;
- ensuring sufficient numbers of qualified and trained food inspectors; and,
- providing overall policy guidance.

It is often not possible to have a single unified structure or an integrated food control system at national level, due to various historical and political reasons. In such cases, it is necessary to develop a national food control strategy to clearly identify the role of each agency to avoid duplication of effort and to bring about a measure of coherence among them. There are at least three types of organizational arrangements at national level for the management of official food controls. These are where many agencies are responsible for food control (a multiple-agency system), where a single agency is responsible for a unified system (single agency system) or where a national integrated approach has been taken (an integrated system). The advantages and disadvantages of each type of system have been discussed (FAO/WHO, 2003). What is evident is that there is not a universal system in existence; the reality is that each country must adapt the management of their food controls to suit their national needs. Some examples of food safety agencies are provided in Table 2.

- ***Inspection services***

The administration and implementation of food laws require a qualified, trained, efficient and honest food inspection service. The food inspector is the key functionary who has day-to-day contact with the food industry, trade and often the public. The reputation and integrity of the food control system depends, to a very large extent, on their integrity and skill. The food inspection services are responsible for enforcing food laws and verifying whether food business operators fulfill the relevant requirements of the law at all stages of production, processing, distribution and sale of food. For these purposes, food inspectors must be trained and have experience in enforcement and prosecution. Different qualifications are required by food inspectors at different stages of the food chain, for instance at primary production agricultural officers, veterinarians, meat inspectors and fisheries inspectors; in retail and catering environmental health officers or food inspectors; and public health specialists and medical doctors in the investigation of food-borne illness. There is a requirement for a multi-agency, multi-disciplinary approach to food inspection to ensure that there are no gaps in the enforcement of food law.

Box 3

The responsibilities of the inspection services include:

- Inspecting food premises for compliance with hygiene regulations;
- Auditing food safety management systems based on HACCP;
- Official food sampling and testing;
- Collection of evidence and prosecution;
- Developing code of best practice;
- Ensuring inspection programmes meet international quality standards;
- Promoting training and education in food safety;

- Continuous professional development;
- Acting ethically and to the highest professional standards.

- ***Monitoring and surveillance***

The surveillance and monitoring of food for chemical and microbiological contaminants is essential for the protection of public health. Collection and analysis of data on contaminants in the food supply is also essential for underpinning risk assessment work and for setting standards. The application of risk assessment in setting national food standards is a requirement under the Sanitary and Phytosanitary Agreement of the World Trade Organization. A food monitoring and surveillance programme is essential to ensure that consumers are not exposed to unacceptable levels of chemical contaminants or harmful microorganisms in the food supply. Such programmes also detect if controls at industry level are effective in reducing exposure to unacceptable levels of pesticides and veterinary drug residues, chemical contaminants or pathogens. It is the responsibility of national governments to ensure that an official laboratory network exists to monitor the food chain and to support the food surveillance and food-borne disease surveillance networks.

Laboratories involved in the analysis of official samples should work in accordance with internationally approved procedures or criteria based performance standards and use methods of analysis that have been validated. Data collected on pathogens isolated from food should be coupled with data from outbreaks, data on human disease and data on animal disease and used to provide a composite picture of the animal reservoirs, the food vehicles and the pathogens of public health importance. Information obtained from monitoring and surveillance programmes form the basis of risk management decisions and underpin control and prevention programmes.

In line with good management practice national agencies performing official controls should meet a number of operational criteria so as to ensure their impartiality and effectiveness. They also should have a sufficient number of suitably qualified and experienced staff and possess adequate facilities and equipment to carry out their duties properly.

- ***Information and communication***

In addition to the responsibilities of government for ensuring the effective management of food controls, an increasingly important role is the delivery of information, education and advice to stakeholders across the farm-to-table continuum. These activities include the provision of balanced factual information to consumers; the provision of information on food safety; ensuring that quality educational programmes are available for key officials and workers in the food industry; and the development of train-the-trainer programmes. Food control agencies should address the specific training needs of their food inspectors and laboratory analysts as a high priority. These activities provide an important means of building food control expertise and skills in all interested parties, and thereby serve an essential preventive function.

Responsibilities of the food industry

Food production, processing and marketing systems have grown more complex in recent years. Food production can range from very sophisticated state-of-the-art facilities to small artisan operations producing traditional foods for local communities. Modern food manufacturing and processing involves the use of highly technical and complex methods to facilitate product stability, extend shelf-life and preserve food quality. Rapid advancement in food technology provides new avenues for improving food manufacturing and processing and for the development and introduction of new products. Global sourcing of ingredients and expansion of international trade in foods all present new challenges and risks.

The primary responsibility for the production of safe food is that of the food sector. They must ensure that control systems are in place at all stages of the food production chain that will prevent, eliminate or reduce to acceptable levels risks to consumers. To complement and support the efforts of food businesses, there must be adequate and effective official controls organized and implemented by national governments. It is therefore essential that the food industry, at all levels, engages in proactive dialogue with regulatory bodies to agree food safety standards and ensure efficient and effective integration of industry and official food safety control systems.

Food industry organizations have a key role to play in working with their members in developing and promoting codes of best hygienic practice and food safety assurance programmes. Food industry organizations at national, regional and international levels have roles in advocating the use of the highest possible food safety standards in their respective sectors. Food legislation applies to all food sectors, both large and small, and sets down the objectives to be achieved by industry. How to achieve objectives set out in legislation is a matter for each food sector and industry organizations can develop agreed codes of practice, guidance documents and industry standards that are food sector specific. Such organizations also have a role to play in assisting in the development of international codes of practice, recommendations and guidelines, and in the provision of technical support and expert advice. An example of the role of industry organizations in working with international agencies in the development of food standards is the large number of such organizations that currently have observer status with the Codex Alimentarius.

- ***Primary production***

With the increasing intensification of animal production in recent years, the farmer has been divorced from the consumer. In industrialized farming systems there has been a tendency for farmers to underestimate the potential health consequences of their actions and focus only on their direct customers rather than the ultimate consumer. In Europe, the BSE crisis redressed this balance and today there is a developing understanding amongst farmers that food safety issues on the farm directly affect consumers' health and hence their purchasing patterns and consequently the market dynamics. Quite simply, what happens on the farm will influence the safety and quality of foods throughout the remainder of the food chain.

Farmers must focus on the safety and quality of their raw materials and their production methods and understand the effects these may have on the safety and quality of the final product be it an animal or a crop. Contamination of animal feeding stuffs or the farm environment will lead to contamination of the final foodstuff and potentially affect consumers' health. Consequently, farmers must think beyond the farm and exert food safety controls on all the inputs into the farm. In this respect farmers should keep detailed records of their raw materials, husbandry practices, animal movements and customers to facilitate quality and food safety control as well as traceability to serve consumer information or food recall purposes. While exemptions may exist for small farmers in developing countries, these general principles should apply.

Risks exist regarding the inappropriate use of veterinary drugs resulting in residues in foods of animal origin. Similar risks exist regarding the inappropriate use of plant protection products such as pesticides and biocides and harmful residues in cereals, fruit and vegetables. Additionally poor hygiene on the farm may lead to contamination of fresh fruit and vegetables and milk or dairy products with increased risks for consumers.

Farmers are responsible for the application of the basic principles of good agricultural practices and good management practices when growing, harvesting, sorting and packing plant crops. Animal medicines, including vaccines, play an important role in the control and prevention of animal disease. Farmers and veterinarians have the responsibility for following strict controls governing the authorization, distribution and use of animal medicines. Ensuring product safety at all points in the chain is essential. This includes the supply, storage, use and disposal of animal medicines. A key requirement is that adequate records of animal remedy usage should be maintained. Farmers have similar responsibilities for the use and monitoring of farm chemicals such as pesticides and biocides. Products should comply with the International Code of Practice – General Principles of Food Hygiene and with other standards set by the Codex Alimentarius Commission on pesticides and veterinary drugs.

Many fresh fruits and vegetables are eaten with little or no cooking and can be a source of disease-causing bacteria, viruses or parasites. Food-borne disease outbreaks have been associated with a broad range of vegetables including raw tomatoes, carrots, sprouts, lettuce, cantaloupe and cabbage (FSAI, 2001; Hillborn, *et al.*1999; Solomon, *et al* 2002). It is essential that fruit and vegetables are free from contamination and are produced, handled and packaged under good standards of food hygiene. It is the responsibility of growers and packers to ensure that only safe produce is placed on the market. Guidelines have been published on good agricultural and management practices during growing, harvesting, washing, sorting, packing, and transporting of fruits and vegetables (see Codex texts and references under Primary Production).

Complying with animal health regulations is essential; only foods from healthy animals should go into the food chain. The World Organization for Animal Health (OIE) is working on scientific standard-setting activities for animal production food safety. In this area it is working with other organizations in reducing food-borne risks to human health due to hazards arising from animals, prior to primary processing of animal products (OIE, 2004). There is general recognition that zoonoses and diseases transmissible to humans through food, whether or not animals are affected by such diseases, may occur and such risks need to be identified and managed.

Farming is becoming more competitive and controls used to assure food safety can often reap rewards in enhanced product quality with subsequent access to markets and increased margins. However, full compliance with all relevant legislation is only a baseline. From there farmers may have to exert enhanced controls in response to consumers' demands as signalled by their direct customers. Hence the development of on farm quality assurance schemes that build on basic legal compliance. Because farmers are the first step in the food chain they are the foundation of food safety control systems and therefore they have a fundamental role in ensuring food safety.

- ***Food processing and manufacture***

Food processors can be divided into primary processors and secondary processors. Primary food processing activities may be carried out on or off the farm. In either event the highest standards of food hygiene are required when animals are slaughtered at abattoirs; on harvesting and slaughtering of farmed fish; during milking and on-farm milk storage; during the milling of seed crops or washing of fruits and vegetables and during the handling of such products as eggs and honey. Secondary food processing is almost exclusively an off farm activity where the products of primary processing activities are further processed for the manufacture of complex consumer foods. Poor standards of hygiene may result in these foods serving as vectors in the transmission of disease.

Food processors must know who is supplying them with food materials and agree standards for the quality and safety of these products. They have an obligation to apply controls to

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assure the safety of their products and this is best achieved through a food safety management system consisting of a Hazard Analysis and Critical Control Point (HACCP) system (ref. CCFH documents) built upon a sound pre-requisite programme involving good hygienic practices, good manufacturing practices; and equipment and structures that are fit for the purpose. Sometimes in primary processing the emphasis of food safety control is more towards maintenance of hygiene. For example, the safety of milk and dairy products are reliant to a large extent on hygiene standards on the farm. Good dairy hygiene practices should include the integrity of farm buildings, pest control and cleanliness of milking equipment and storage facilities for milk. Similarly good hygienic practices should be followed in the primary processing of fish, meat and eggs. The Codex standards and codes of practice give excellent examples of the standards of hygiene required to assure consumer protection and food safety (WHO/FAO Codex 2004).

Where feasible, primary processors should also monitor the safety of the materials they are supplied with as well as the products they produce as a means of verifying the effectiveness of their food safety management systems. Processors must set specifications for their raw materials that take account of legal limits for chemical and microbiological contaminants and legal requirements for labelling and traceability as well as quality characteristics. This also requires them to maintain records for traceability purposes and develop efficient recall systems.

Full compliance with food safety regulations and co-operation with regulatory authorities is necessary to ensure the effectiveness of food safety control programmes. However, quality assurance schemes are also becoming prevalent in this sector resulting in the operation of independently audited, certified food safety and quality standards that are more stringent than legal requirements. Future developments will inevitably involve the recognition of independent certification to agreed standards by regulators attempting to design cost efficient and effective national control programmes.

- ***Food retailing***

Food retailing involves the sale of food to the consumer and as such consists of both grocery and catering businesses. Today, the distinction between grocery and catering businesses is eroding as more and more grocery retailers extend their businesses into offering hot take-away food and delicatessen items. Similarly, some caterers now supply a more traditional grocery line on their premises, usually focusing on the artisan ingredients used in the preparation of their food.

It is essential that food retailers like processors adopt a food safety management system to control the safety of their food products. Even businesses whose activities only involve the distribution of pre-packaged food must adhere to good hygienic practices and use the HACCP approach to proactively identify and manage food safety hazards. In traditional grocery businesses where packaged and unpackaged food is sold to the consumer for home preparation or consumption, the control of the foods they receive and control of the foods they display on a first-in-first-out principle is a vital element of a food safety management system. This coupled with hygienic practices; traceability systems and an effective food recall system comprise the basis of effective food safety controls. In retail businesses where food is prepared for consumption by consumers on or off site, the preparation of the food can lead to food safety issues. Catering businesses must therefore implement HACCP systems and be especially diligent about staff personal hygiene, the hygiene of the equipment and premises as well as staff training. The transient nature of workers in the catering business can put a particularly heavy burden on the ability of the business to train its staff. However, unless staff are trained appropriately in food hygiene, the risks of food poisoning increase and many outbreaks of food-borne illness can be attributed to lack of adequate hygiene knowledge and consequential poor practices in catering establishments.

HACCP systems can be effective in the catering retail business but their application is more difficult than in manufacturing due to the diverse non-linear arrangement of the food preparation processes. A particular challenge for businesses and regulators in this area is to adapt the traditional HACCP approach to achieve proactive food safety control. Caterers have a role in dialogue with regulators to achieve successful adaptation and application of the HACCP system. Regulators have a role in simplifying the HACCP concept and facilitating ease of application in the catering environment.

There are important food safety concerns associated with "street foods" in developing countries where street food vendors are an important component of the food supply chain. These foods are generally prepared and sold under unhygienic conditions, with limited access to safe water, sanitary services, or garbage disposal facilities. Hence street foods pose a high risk of food poisoning due to microbial contamination, as well as improper use of food additives, adulteration and environmental contamination. Specific guidance on the responsibilities of street food vendors has been provided by WHO (WHO, 1996).

- ***Consumer food preparation***

Consumers have a responsibility to protect themselves and their families from risks associated with the preparation and consumption of foods. Food-borne illness can occur as a result of foods being incorrectly stored, not fully cooked, or when cross-contamination between raw and cooked "ready-to-eat" food is allowed to happen. Consumers need to be aware of the practices and precautions that need to be taken to prevent the spread of disease. Consumer education in the basic principles of food hygiene and safety is a necessity. A good example of the basic information the consumer needs to protect themselves and their families is outlined in the WHO - Five Keys to food safety; cook, clean, separate raw and cooked foods, store at correct temperature and use safe water and materials (http://www.who.int/foodsafety/ publications/consumer/5keys/ en/).

Role of international agencies

International organizations play a major role in facilitating international dialogue, in building consensus towards a science-based risk analysis process and in harmonizing food safety standards. It is important that these activities engage both developing and developed countries and are both open and transparent. The need for technical assistance in strengthening food control systems in developing countries is well recognized. FAO and WHO are the two main specialized agencies of the United Nations involved in food quality and safety technical cooperation programmes with developing countries. In the area of food safety, the SPS Agreement formally recognizes the standards, guidelines and recommendations established by the Food and Agriculture Organization (FAO)/World Health Organization (WHO) Codex. The recognition of Codex standards eliminates the need for each country individually to do its own risk assessment for any given hazard for which a standard, recommendation or guideline exists. If countries adopt national food safety standards based on the Codex standards, and have mechanisms for monitoring compliance among food producers with these standards, then their food safety measures are presumed to be consistent with SPS provisions.

Both the SPS Agreement (Article 9) and TBT Agreement (Article 11) specifically refer to the need to provide technical assistance to developing countries. Such assistance may be in areas of processing technologies, research and infrastructure, establishment of national regulatory bodies, etc. In particular, developed countries which import food from developing nations are required, upon request, to provide technical assistance to the developing exporting countries to enable these countries to meet their SPS or TBT obligations in international food trade.

The specialist international agencies in the area of food safety and food quality technical assistance, such as FAO, OIE, UNESCO, UNIDO and WHO should collaborate to avoid overlaps and duplication and strengthen formal and informal relationships.

Conclusion

The responsibility for food safety is shared among all stakeholders involved in the production and marketing of foods. The way forward is for integrated food controls at all stages of production and in all sectors in line with the "farm to fork" principle which allows the creation of a systematic, comprehensive system covering all food in all sectors, replacing the current sector specific, patchwork of rules. Communication and consultation with stakeholders on all aspects of food safety at all stages of the decision-making process are key to a credible, open, transparent and accountable food safety system.

TABLES

Table 1 Examples of food laws

Australia/New Zealand
http://www.foodstandards.gov.au/foodstandardscode/

Canada
http://www.hc-sc.gc.ca/food-aliment/friia-raaii/food_drugs-aliments_drogues/act-loi/e_index.html

European Union
http://europa.eu.int/comm/food/food/controls/index_en.htm

Ireland
http://www.fsai.ie/legislation/index.asp

United Kingdom
http://www.foodstandards.gov.uk/enforcement/foodlaw/

United States
http://www.cfsan.fda.gov/~dms/foodcode.html
http://www.fda.gov/default.htm

Table 2 Examples of food safety agencies

Austria - Agricultural Inspection Service and Research Centre, Vienna
www.lwvie.ages.at

Belgium - The Food Agency
www.afsca.be

Cyprus - Cyprus Safety & Health Association (CySHA)
www.cysha.org.cy

Czech Republic - Czech Agriculture and Food Inspection Authority
www.szpi.gov.cz/eng/

Denmark - The Danish Veterinary and Food Administration
www.fdir.dk

Estonia - Veterinary and Food Board
www.vet.agri.ee

Finland - National Food Agency
www.elintarvikevirasto.fi/english

France - French Food Safety Agency
www.afssa.fr

Germany
Bundesamt für Verbraucherschutz und Lebensmittelsicherheit (BVL)
www.bvl.bund.de/

Federal Institute for Risk Assessment
www.bfr.bund.de

Greece – The Hellenic Food Authority
www.efet.gr

Ireland - Food Safety Authority of Ireland
www.fsai.ie

Korea - Food and Drug Administration (KFDA)
http://www.kfda.go.kr/

Netherlands - The Dutch Food and Non-Food Authority
www.vwa.nl

Norway
Norwegian Agricultural Inspection Service - www.landbrukstilsynet.no
Statens næringsmiddeltilsyn - www.snt.no/
Matportalen (the Food Portal) - http://matportalen.no

Spain - Ministerio de Sanidad y Consumo
www.msc.es

Sweden - National Food Administration
www.slv.se

United Kingdom - Food Standards Agency
www.foodstandards.gov.uk

Agenda Item 4.2 GF 02/5a

SECOND FAO/WHO GLOBAL FORUM OF FOOD SAFETY REGULATORS
Bangkok, Thailand, 12-14 October 2004

LEGAL BASIS FOR FOOD SAFETY OFFICIAL AND NON-OFFICIAL CONTROL:
"Strengthening official food safety control services"
(Paper prepared by South Africa)

1. INTRODUCTION

Various food inspection and certification systems have been implemented in a number of countries over a period of time as a response to the management of food-borne risks to human health. For some time in South Africa it has been recognized that the control over foodstuffs is fragmented between a number of authorities and components at national, provincial and local level, as well as between several other organizations. Foodstuffs are not always regulated as foodstuffs but also as animals, animal products, plants or plant products. The objectives of such control relate to human health concerns such as food safety and nutrition, as well as to quality and to animal and plant health. The same commodity is therefore often controlled by several different authorities in relation to different sets of legislation albeit from different view points and for different reasons.

2. OFFICIAL CONTROL

Legislation and mandates of role players

The South African legislation relating to food and related matters and the authorities that are involved in the administration and enforcement of such legislation include the following:

2.1 Department of Health

a) The Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act 54 of 1972). This Act governs the manufacture, sale and importation of all foodstuffs from a safety/public health point of view and is administered by the Directorate: Food Control of the Department of Health. General law enforcement is conducted by authorized local authorities in their areas of jurisdiction while import control is exercised by the provincial health authorities on behalf of the national Department.

b) The Health Act, 1977 (Act 63 of 1977). Regulations under this Act govern the hygiene aspects of food premises (including milking sheds) and the transport of food. These are also administered by the Directorate: Food Control of the Department of Health and enforced by local authorities in their areas of jurisdiction. Provincial health departments are however involved in enforcement in areas where there are no local authorities.

c) The International Health Regulations Act, 1974 (Act 28 of 1974) has certain provisions that relate to food. The Department of Health is responsible for the approval of the source of food for consumption on the premises of ports and airports as well as on vessels and aircraft. It also states that such food must be handled in a hygienic manner. Currently the provincial health authorities are conducting these approvals on behalf of the national

Department. The Act requires local authorities to inspect the premises and take food samples for analysis.

d) The Medicines and Related Substances Act, 1965 (Act 101 of 1965) is administered and enforced by the Directorate: Medicines Administration of the Department of Health. The Act *inter alia* makes provision for the registration of veterinary drugs, as well as for the registration of foodstuffs and food supplements with medicinal effects or in respect of which medicinal claims are made.

According to the Constitution, there are concurrent health legislative competencies for the national as well as the provincial departments.

The National Health Plan determines that the National Health Authority (NHA) is responsible for the development and provision of all health care in South Africa. This includes the formulation of national policy and strategic planning, as well as the co-ordination of planning and the functioning of the overall health system in the country. The NHA must develop guidelines, norms and standards to apply throughout the health system and transform policy into relevant integrated programmes in health development. The central level will elaborate policy statements and health legislation. The NHA must ensure the implementation of national priorities, plans and strategies whilst co-coordinating the organizations providing national services. International liaison is another listed function.

The following are some of the functions of the National Department of Health as listed in the White Paper:

- provide leadership in the formulation of health policy and legislation, including the development of a health system;
- provide leadership in quality assurance, including the formulation of norms and standards;
- develop a coordinated information system and monitor the progress made in the achievement of national health goals;
- provide appropriate regulation of the public and private health sectors, and regulate health-related activities in other sectors;
- liaise with national health departments in other countries and international agencies.

The White Paper also states that the Directorate of Food Control is responsible for developing standards for food hygiene, additives, labelling and identification, and ensuring food safety through regulation and public education, as well as the ratification of, and participation in, international standards. Legislation relevant to nutrition must be reviewed, strengthened, implemented and enforced:

- to protect breast-feeding, and to control the marketing of infant foods;
- for the mandatory iodination of salt;
- for the mandatory fortification of appropriate staple foods;
- to ensure food safety and quality.

The Foodstuffs, Cosmetics and Disinfectants Act, 1972, provides the Minister and the Director-General of Health with a number of mandates, most of which have been delegated to a lower level within the National Department, mostly within the Directorate: Food Control:

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- the authorization of inspectors;
- the authorization of analysts;
- the authorization of local authorities;
- approve extended health detention;
- acceptance of a guarantee in respect of extended health detention;
- issuing an order in respect of the disposal of an imported foodstuff;
- make regulations as set out in Section 15 of the Act;
- approval to make known the contents of an analyst's report;
- apply any provision of the Act to any foodstuff in transit to another country;
- approve the sale of irradiated food.

The Directorate: Food Control is the National Contact Point for the Joint FAO/WHO Codex Alimentarius Commission in South Africa. This is by agreement with the other most important role players in this regard, namely the Department of Agriculture and the Department of Trade and Industry, and with the approval of the remaining members of the National Codex Committee, namely the Department of Foreign Affairs and the National Consumer Forum.

The White Paper also states that the Directorate: Nutrition is responsible for developing policies, strategies and guidelines for a national integrated nutrition programme, while the National Forensic Chemistry Laboratories are responsible for an effective chemical laboratory service at the national level in support of forensic medicine and law enforcement, through regulatory control of chemical substances harmful to health.

The Department of Health is the co-coordinator of the Health sector of the Southern African Development Community and as such has the mandate to initiate the development of policy on food safety and related matters.

2.2 The Provincial Health Departments

According to the Constitution, provinces must supervise local government. The National Health Plan for South Africa states that the provinces must support, monitor and evaluate district health services.

According to the White Paper, the mission of a provincial health department is to promote and monitor the health of the people in the province, and to develop and support a caring and effective provincial health system, through the establishment of a province-wide district health system based on the principles of primary health care.

Provincial health authorities, into which the regional offices of the former Department of National Health and Population development were incorporated, are currently conducting food import control on behalf of the National Department.

2.3 District Health Authorities and other Local Government

The Constitution states that local government must ensure the provision of service to communities in a sustainable manner. They must promote a safe and healthy environment, render municipal health services and licenses and control the undertakings that sell food to the public.

According to the National Health Plan for South Africa, district health authorities are to promote primary health care/management and coordination of services, including environmental health, nutrition and control of communicable and non-communicable diseases. Services such as public utilities - including food handling premises - will be the responsibility of the local authorities.

The White Paper states that the health system will focus on the districts as the major focus of implementation, and emphasizes the primary health care approach. Health districts must provide for collaboration with other sectors of Government and NGOs in promoting health and ensuring the rendering of health services in the health district. They must also ensure primary environmental health services, the promotion and maintenance of environmental hygiene, the enforcement of environmental health legislation - including food hygiene - and identify and control local health hazards.

2.4 Various laboratories

The Pretoria and Cape Town Forensic Chemistry Laboratories of the Department of Health conduct chemical analyses of food submitted by provincial and local authorities. The laboratories of the South African Institute for Medical Research and the Pathology Laboratory of KwaZulu-Natal Province are contracted by the Department of Health to conduct microbiological analyses of food submitted by provincial and local authorities. Analysts at these laboratories, as well as at a number of other laboratories in the country, have been authorized under the terms of the Foodstuffs, Cosmetics and Disinfectants Act, 1972.

The National Health Plan for South Africa refers to the integration of laboratory services into the primary health care system.

2.5 Standards South Africa (STANSA)

The Standards Act, 1993 (Act 29 of 1993) which is administered and enforced by Standards South Africa (STANSA) – *part of the South African Bureau of Standards - inter alia* has regulations which address canned meat (more than 10% meat) and canned and frozen marine products. STANSA compiles its health-related mandatory specifications by agreement with the Department of Health and in terms of the Standards Act, 1993. The system of control inspections in terms of these compulsory standards are based on resident inspectors in and around factories during production periods. STANSA also operates a mark scheme by means of non-compulsory specifications.

STANSA protects the interests of South Africa in foreign markets by ensuring that locally manufactured products intended for export are of acceptable quality. It is the competent authority for the certification of various food items of marine origin and offers an export certification service to the fishing industry.

Section 10 of the Foodstuffs, Cosmetics and Disinfectants Act, 1972, also authorizes certain officers of STANSA as inspectors under the Act.

2.6 The Commissioner of Customs and Excise

The role of the Commissioner of Customs and Excise in the control over the importation of food is set out in Sections 10 and 14 of the Foodstuffs, Cosmetics and Disinfectants Act, 1972.

2.7 Department of Agriculture

a) Directorate Food Safety and Quality Assurance

i) Agricultural Product Standards Act, 1990

The Agricultural Product Standards Act, 1990 (Act 119 of 1990) controls and promotes agricultural product food safety and quality assurance standards (e.g. meat, dairy products, cereals, certain canned products, fruit and vegetables) for local as well as export purposes. The Act is administered by the Directorate: Food Safety and Quality Assurance (FSQA) and enforced by the Directorate: South African Agricultural Food Quarantine and Inspection Services (SAAFQIS) of the National Department of Agriculture. Various assignees such as the Perishable Products Export Control Board – *for all agricultural products intended for export*, SAMIC - *for meat carcasses intended for sale on the local market* and PROKON – *for potatoes intended for sale on the local market,* are however also appointed and authorized to carry out the physical inspections under the terms of this Act.

The mandate is contained in the above-mentioned Act, namely to provide for control over the sale and export of certain agricultural products and other related products; and for matters related thereto. This includes the setting of quality standards such as composition and physical appearance. The Act regulates standards of quality and labelling of products for local and export purposes. It deals with a wide variety of products such as fresh meat, dairy products, cereals, canned products, fresh fruit and vegetables, fruit juices, nectars, drinks and fruit flavoured drinks as well as maize, wheat etc.

ii) Liquor Products Act, 1989

The Liquor Products Act, 1989 (Act 60 of 1989) addresses wine and spirits. It is also administered by the Directorate: Food Safety and Quality Assurance and enforced by the Directorate: SAAFQIS of the National Department of Agriculture.

The mandate contained in the Act is to provide for control over the sale and production for sale of certain liquor products, the composition and properties of such products and the use of certain particulars in connection with the sale of such products: for the establishment of schemes for control over the import and export of certain alcoholic products and for matters related thereto.

iii) The Meat Safety Act, 2000 (Act 40 of 2000) and the Standing Regulations under the Animal Slaughter, Meat and Animal Products Hygiene Act, 87 (Act 87 of 1967)

The Directorate: Food Safety and Quality Assurance administers this Act. The enforcement of the Act is the responsibility of provincial and local authorities throughout the country.

The purpose of the Act is to make provision for the maintenance of proper standards of hygiene in the slaughtering of animals for the purpose of obtaining suitable meat for human and animal consumption, and in the handling, keeping and conveyance of such meat and animal products at and from abattoirs.

iv) The Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act 36 of 1947) is administered and enforced by the Directorate: Food Safety and Quality Assurance of the National Department of Agriculture. Animal feeds, stock remedies and agricultural remedies (pesticides etc) are registered under the terms of this Act.

b) Directorate Animal Health

i) The Animal Diseases Act, 1984 (Act 35 of 1984) is administered by the Directorate: Animal Health of the National Department of Agriculture and enforced by the provincial departments, except for import control which is a national responsibility. The Act controls animals as well as animal products, including meat, milk, eggs and their products from an animal disease point of view.

The mandate of this Directorate by virtue of the above-mentioned Act is to provide for control of animal diseases and parasites, for measures to promote animal health, and for matters related thereto, for example the control over imported animal products.

c) Directorate Plant Health

i) The Agricultural Pest Act, 1983 (Act No. 36 1983)

The mandate of this Directorate is contained in the above-mentioned Act, namely to regulate imports and factors that could affect the health of the South African *agro/forest* industry. The inspections, especially of imported food of plant origin, are vital to guard against plant diseases, harmful pathogens etc.

Every South African has the right to import plants and plant products, provided that such imports do not place the *agro/forest* industry and the environment at risk. The same principle applies for the export of plants and plant products regarding the environment and *agro/forest* industry of the importing country. To achieve these objectives, the Government of South Africa is a signatory of the *International Plant Protection Convention* (IPPC).

The National Plant Protection Organization (NPPO) for South Africa is the Directorate: Plant Health.

d) Directorate Genetic Resources Management

i) The Plant Breeders' Rights Act, 1976 (Act 15 of 1976), the Plant Improvement Act, 1976 (Act 53 of 1976) and the Agricultural Pests Act, 1983 (Act 36 of 1983) and the Act on Genetically Modified Organisms, 1997 (Act 25 of 1997), are administered by the Directorate: Plant Health and Directorate: Genetic Resources Development. The regulations made in terms of these Acts include certain foodstuffs.

The mandate of the Directorate: Genetic Resources Development is *inter alia* contained in the following Acts of Parliament; The Plant Breeders Rights Act, 1976, (Act 15 of 1976), The Plant Improvement Act,1976 (Act 53 of 1976) and the Act on Genetically Modified Organisms, 1997 (Act 53 of 1976). The regulations promulgated in terms of these Acts all include or have an influence in or on certain food as defined.

2.8 Department of Trade and Industry

The Trade Metrology Act, 1973 (Act 77 of 1973), and the Trade Marks Act,1963 (Act 62 of 1963), both relate to food labelling.

2.9 By-laws of local authorities

Many local authorities have food hygiene by-laws which they enforce in addition to the national regulations.

3. NON-OFFICIAL CONTROL

3.1 EUREPGAP

The EUREPGAP system was established to specifically aim at controlling food safety related aspects at producer level. Eurep (Euro Retailer Produce Working Group) uses GAP (Good Agricultural Practice) as a production standard for the certification of good agricultural practice in the agricultural and horticultural industry. At this moment, the GAP standard is being applied in fresh fruits and vegetables. All kinds of agricultural products for human consumption can be certified with this standard. Special standards for flower, animal production, grain, coffee, and feed are under development. Eurepgap is based on the principles of risk prevention, risk analysis (among other through HACCP), sustainable agriculture by means of Integrated Pest Management (IPM) and Integrated Crop Management (ICM), using existing technologies for the continuous improvement of farming systems.

EUREPGAPAFRICA, a regional leg of EUREPGAP, was formed to specifically address issues pertaining to GAP aspects in the African region. As we all know, Africa has its own unique culture just like any other part of the world. Thus, there would be differences in the application and interpretation of protocols developed in Europe for this part of the world.

3.2 ISO

ISO standards contribute to making the development, manufacturing and supply of products and services more efficient, safer and cleaner. They make trade between countries easier and fairer. They provide governments with a technical base for health, safety and environmental legislation. They aid in transferring technology to developing countries. ISO standards also serve to safeguard consumers, and users in general, of products and services - as well as to make their lives simpler.

ISO standards are voluntary. As a non-governmental organization, ISO has no legal authority to enforce their implementation. A certain percentage of ISO standards - mainly those concerned with health, safety or the environment - has been adopted in some countries as part of their regulatory framework, or is referred to in legislation for which it serves as the technical basis. Such adoptions are sovereign decisions by the regulatory authorities or governments of the countries concerned; ISO itself does not regulate or legislate. However, although ISO standards are voluntary, they may become a market requirement, as has happened in the case of ISO 9000 quality management systems.

Developing countries in particular, with their scarce resources, stand to gain from this wealth of knowledge. For them, ISO standards are an important means both of acquiring technological know-how that is backed by international consensus as the state of the art, and of raising their capability to export and compete on global markets.

The ISO standards are administered by STANSA in South Africa. PPECB achieves ISO 9001:2000, as well as, 62 and 65 certification from STANSA which is a member body of ISO.

3.3 Organic certification e.g. Ecocert

These organizations administer systems which are market driven. These systems contribute to international standards and thus promote the food safety chain nationally and internationally.

3.4 Internal control e.g. Production Operation systems

These systems are based on international standards to contribute to food safety globally.

3.5 British Retail Consortium (BRC)

The objective of the BRC Global Standard – Food is to specify food safety and quality criteria required to be in place within a manufacturer's organization to supply product to UK retailers. The format and content of the Standard is designed to allow an assessment of the supplier's premises and operational systems and procedures by a competent third party, thus standardizing food safety criteria and monitoring procedures.

The Standard requires:

- the adoption and implementation of HACCP;
- a documented and effective quality management system;
- control of factory environment standards, product, process and personnel.

An assignee of the Department of Agriculture, namely PPECB has been authorized by the British Retail Consortium (BRC) in London to certify organizations that package fresh produce according to the BRC Global Standard - Food.

Organizations complying with this standard will receive an internationally recognized certificate displaying the BRC quality mark. This certificate of compliance will give assurance to potential customers that the product they are buying is safe for their consumers.

European retailers not only require a quality product, but also a safe product. As a result, producers and pack houses that supply European markets are now being forced to implement various food safety related systems. Pressure is now also being exerted on pack houses to implement food safety systems.

The BRC Global Standard – Food is recognized by European retailers as the standard against which pack houses must be audited to verify that food safety control systems have been effectively implemented.

The advantage for South African producers and exporters of fresh fruit and vegetables being certified to the BRC Global Standard - Food is that their produce will automatically gain entry to EU markets.

3.6 Nature's Choice

This is a code of practice covering biodiversity, conservation and environmental management developed by Tesco and ADAS (Agricultural Development Advisory Service) for farms that supply Tesco with fresh fruit, vegetables, salad and horticultural products. Suppliers in South Africa must be accredited to this code. This code also includes production and produce handling practices which are sustainable and protect, and where possible enhance the well being and biodiversity of the environment. Nature's choice demonstrates Tesco's commitment to protecting and wherever possible enhancing the environment and to raising standards in the industry.

4. CONSEQUENCES OF MULTIPLE LEGISLATION

Multiple legislation governing food control in South Africa results in fragmentation, duplicate decision-making and government involvement. Some examples are the following:

4.1 The Foodstuffs, Cosmetics and Disinfectants Act, 1972 and the Agricultural Product Standards Act, 1990, both set standards for milk and dairy products, including the labelling thereof. The former are health related and are enforced by local authorities (locally) and provincial health authorities (import) while the latter are quality related and are enforced by the Directorate: Food Safety and Quality Assurance of the National Department of Agriculture. The Animal Diseases Act, 1984 however, also controls milk and dairy products (including imports) from an animal health point of view and regulates the Bovine TB and Brucellosis Eradication Schemes.

Milking shed regulations which have been elaborated under the terms of the Health Act, 1977, are enforced by provincial and local authorities but not always by the local authorities into whose areas the milk is distributed. Provincial animal health officers who visit farms regularly and who are involved in mastitis control, which includes milking shed hygiene, are not authorized to inspect milking sheds. Foreign importing countries however often require the veterinary authorities to certify milk and dairy product exports.

Local authorities have their own by-laws governing milk premises in their areas of jurisdiction.

At least four sets of legislation and six different authorities at all levels are therefore involved in the control of milk and dairy products. Import control is conducted by three different authorities. Each authority may only inspect and sample specific aspects in terms of its own legislation. Samples are submitted for analysis to a number of different laboratories.

4.2 The importation of foodstuffs is controlled by a variety of authorities. At the larger ports of entry officers of the Directorates of Veterinary Public Health, Animal Health, STANSA, as well as provincial health authorities are engaged in full-time import control and often inspect and sample the same product in terms of different legislation and then submit samples to a number of different laboratories. The Directorate: Food Safety and Quality Assurance does not inspect imported foodstuffs at the point of entry. This is only done when products are encountered in the trade.

In contrast, at many of the inland ports of entry no control is exercised by any of these components. Because of the fragmented responsibilities none of these authorities feels that its specific area of control justifies the attention of a full-time import control officer. Collectively however, one officer to carry out the responsibilities of all the authorities could be justified at many points of entry that are currently unmanned for food control purposes.

4.3 Many more examples where more than one official control mechanism is active for a food commodity can be named. On the positive side, the fragmented structural and legislative control however precludes an efficient multidisciplinary approach which is necessary for the proper control, by specialists in their fields, of many products and which would provide assurances for the consumer from production until the product is purchased and consumed. On the negative side, the fragmentation has been confusing to importers, exporters and producers and made it impossible to implement a national food monitoring programme or to compile a national data base in this regard.

5. INTERNATIONAL IMPLICATIONS

The necessity for an efficient national food control system arises not only from public health considerations but also from trade and economic implications. In this regard, South Africa's membership of the World Trade Organization (WTO), the Codex Alimentarius Commission (CAC) and the World Organization for Animal Health (OIE) are of prime importance.

The WTO is the legal and institutional foundation of the multilateral trading system. It provides the principal contractual obligations determining how governments frame and implement domestic trade legislation and regulations. It is the platform on which trade relations among countries evolve through collective debate, negotiation and adjudication.

The Marrakesh Agreement concluded in 1994 resulted in almost 30 multilateral trade agreements to which all members of the WTO are committed. Two of these agreements, namely the Agreement on Sanitary and Phytosanitary Standards (SPS Agreement) and the Agreement on Technical Barriers to Trade (TBT Agreement), have a direct impact on food safety issues.

In order to successfully conduct trade in food an importing country must be satisfied that imports meet its legitimate requirements, so that public health is appropriately protected, quality standards are maintained, and fraudulent practices are prevented.

5.1 The Agreement on the Application of Sanitary and Phytosanitary Measures (SPS) concerns the application of food safety and animal and plant health regulations. The main purpose is to ensure that countries do not undermine international trade by imposing non-tariff barriers. The basic provisions of the SPS Agreement are that any measures that may affect international trade must not be stricter than necessary for the protection of human, animal or plant health, must be based on scientific principles, and must not be maintained without sufficient scientific evidence.

The SPS Agreement defines "international standards, guidelines and recommendations", with reference to food safety as those established by the Codex Alimentarius Commission and with reference to zoonosis as those developed under the auspices of OIE.

Codex and OIE standards and guidelines therefore assumed a completely new dimension as the reference of national trade requirements. For this reason the World Health Organization in Circular C.L.8. 1994 dated 26 April 1994 stated: "Consequently it will be prudent for the health sector to participate even more actively in the work of the Codex Alimentarius Commission and its subsidiary bodies, both at national and international levels."

Article 3 (Harmonization) of the SPS Agreement includes the following paragraphs:

> "1. To harmonize sanitary and phytosanitary measures on as wide a basis as possible, Members shall base their sanitary or phytosanitary measures on international standards, guidelines or recommendations, where they exist, ..."

> *"4. Members shall play a full part, ... , in the relevant international organizations and their subsidiary bodies,..... to promote within these organizations the development and periodic review of standards, guidelines and recommendations with respect to all aspects of sanitary and phytosanitary measures."*

Article 5 deals with the Assessment of Risk and Determination of the Appropriate Level of Sanitary and Sanitary Protection. Paragraph 8 of this Article states:

> "When a Member has reason to believe that a specific sanitary or phytosanitary measure introduced or maintained by another Member is constraining, or has the potential to constrain, its exports and the measure is not based on the relevant international standards, guidelines or recommendations, or such standards, guidelines or recommendations do not exist, an explanation of the reasons for such sanitary or phytosanitary measure may be requested and shall be provided by the Member maintaining the measure."

Article 4 dealing with equivalence, is also very important:

> "1. Members shall accept the sanitary or phytosanitary measures of other Members as equivalent, even if these measures differ from their own or from those used by other Members trading in the same product, if the exporting Member objectively demonstrates to the importing Member that its measures achieve the importing Member's appropriate level of sanitary or phytosanitary protection. For this purpose, reasonable access shall be given, upon request, to the importing Member for testing and other relevant procedures.
>
> *2. Members shall, upon request, enter into consultations with the aim of achieving bilateral and multilateral agreements on recognition of the equivalence of specified sanitary or phytosanitary measures."*

5.2 The Agreement on Technical Barriers to Trade modifies the GATT Agreement which has existed since 1980. It seeks to ensure that technical regulations and standards, as well as testing and certification procedures, do not create unnecessary obstacles to trade. It applies to all commodities and covers all technical requirements and standards that are not covered by the SPS Agreement. Therefore the SPS and TBT Agreements can be seen as complementing each other. The TBT Agreement's application to food would cover issues such as labelling.

5.3 The implications of the above Agreements can be summarized as follows:

- South Africa's food safety regulations must be in line with the minimum Codex standards. Should they be stricter than Codex standards, without sound scientific justification, the country can become involved in a dispute. Weak control and less strict regulations or the absence of regulations governing specific matters can lead to the dumping of undesirable food as well as problems in terms of the application of equivalence. Failure to meet the demands can lead to losses of potential exports worth millions.
- All components involved in food control must therefore possess the human and other resources that will enable them to function in an optimal manner, determine policy and write and administer regulations that comply with global norms and standards.
- South Africa must participate in the activities of the CAC and its various general and commodity committees. Not only does South Africa have such an obligation in terms of Article 3.3 of the SPS Agreement; it also needs to make its inputs into those measures which will affect South Africa directly. Sessions of the CAC and its

committees are in effect extensions of South Africa's regulatory activities. They have the added benefit of global expertise concentrating on specific issues, thereby saving months or even years of work in isolation. Major powers tend to favour their economic interests at such meetings making it imperative for developing countries to be present to protect and further their own interests.

- Article 4 (Equivalence) makes it imperative that South Africa's sanitary (food safety control) measures are at least at the same level as those of its major trading partners. According to the SPS Agreement such sanitary measures include:

"All relevant laws, decrees, regulations, requirements and procedures including inter alia, end product criteria; processes and production methods; testing, inspection, certification and approval procedures; quarantine treatments, provisions on relevant statistical methods, sampling procedures and methods of risk assessment; and packaging and labelling requirements directly related to food safety."

Article 4 applies to the food safety, animal and plant health activities of the Departments of Health and of Agriculture. The country as a whole must therefore ensure that its food control system, inclusive of animal and plant health control, is at least equal to that of its major trading partners, such as the USA and the European Union.

6. SUMMARY

Food safety legislation should give a sound basis to the national system for the delivery of food control and food inspection services that should satisfy at least the following minimum criteria:

6.1 Must be able to satisfy and adhere to national and international norms and standards.

6.2 Effective utilization of resources with clear policy on private vs. public goods. Those activities that are obligatory government functions (government financed) vs. those functions that can be outsourced/done by the private sector, must be clearly defined. In general the setting and auditing of norms and standards should be a government function while certain inspection and certification functions could be outsourced and/or delivered on a user-pay principle.

6.3 The system must be able to satisfy the food safety objectives of a country and must guarantee the required level of protection for human, animal and plant health.

6.4 The system must be able to render production support i.e. facilitate and promote trade. It must also be able to supply according to the needs of he country and not inhibit or discourage production and trade.

6.5 The decision-making process and policy formulation must abide with international criteria i.e. must be scientifically justified.

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SECOND FAO/WHO GLOBAL FORUM FOR FOOD SAFETY REGULATORS

Bangkok, Thailand, 12–14 October 2004

EUROPEAN FOOD SAFETY CONTROL SYSTEMS: NEW PERSPECTIVES ON A HARMONIZED LEGAL BASIS

(Paper prepared by the Ministry of Agriculture, Nature and Food Quality and the Food and Consumer Product Safety Authority of the Netherlands)

1. Introduction

Effective food control systems are essential to protect the health of consumers. They are also vital in enabling countries to assure safety and quality of food products for international trade and to verify that imported food products meet national requirements. The legal framework for food safety in the European Union Member States is currently in process. Serious food safety incidents during the nineties urged the European Union and other countries across the world to review their food safety systems and to look for better ways to protect consumers against unsafe food. In 2000 the European Union launched its **White Paper on Food Safety** as a start for a new legal basis for appropriate food and animal feed production and food safety control. The **Codex Alimentarius Commission** continues to develop international standards, guidelines and recommendations to reduce food safety risks. The Codex Alimentarius developed risk analysis, the integrated food chain approach and HACCP. The **risk analysis paradigm**, including risk assessment, risk management and risk communication have been incorporated as general principles in EU law and form the legal basis of the food safety systems in the Member States.

In the White Paper of the EU the entire food production chain (including animal feed) is held responsible for the safety of food. The Governments of the Member States verify that this responsibility is adequately met by the producers to protect the health and well-being of consumers. The document contains 84 action points that have to be processed into community law to strengthen the food safety systems of the Member States. Within this framework, the EU introduced the **General Food Law** in 2002, defining general food safety principles and food safety procedures. Once this Regulation was in place, the **European Food Safety Authority** was set up. This organization started its activities in 2003, by focusing on risk assessment and scientific advice in the field of food safety questions. The White Paper has helped to strengthen and synchronize hygienic conditions and practices throughout all the EU Member States. This year an integrated **EU Hygiene Package** was completed in which the existing rules on hygiene were incorporated.

The European Union has established a specific legislation to harmonize official control procedures in the Member States. It also regulates the provisions that countries outside the EU should fulfill for entering the EU markets with their food products. Although control procedures are largely harmonized, the structure and set-up of control organizations is quite different across the European Union. The variety in national political and economical conditions have led to differences in the way Community legislation was transposed in national law and in operational systems for food production and inspection. Therefore, there is a large variety of food safety **control systems** throughout the Member States. In certain countries the responsibility of food control is decentralized and mandated to regions or provinces, whereas in other countries food safety control is in the hands of just one central organization. In recent years many countries in the European Union have established a **National Food Safety Authority**. Again, the responsibilities and tasks of this organization may vary from one country to another. The main task is usually enforcement of food control regulations, but **risk assessment** and scientific advice, and **risk communication** are also often included.

Risk management remains basically a prime responsibility of governments to protect consumers against food safety hazards. Risk management is based on risk assessment and scientific evidence, but also other aspects of food production could be taken into consideration like environmental protection and animal welfare. An effective food safety management system may be a combination of direct governmental supervision based on food safety requirements prescribed by law and private food safety control systems. **Certification** of production processes by accredited organizations may help producers to reduce risk levels and to convince Governments and consumers of the safety and quality of their produce. The confidence of consumers strongly depends on the quality of the certification body. In many western countries the private sectors have established their own additional quality requirements and certification schemes for specific product groups. These non-official requirements may improve certain quality aspects of products, but such higher demands may also hinder the access of businesses to markets. All European Union legislation and other related information can be found at website: http://europa.eu.int/eur-lex/.

2. The EU White Paper on Food and Feed, principles of food control

White papers are documents containing proposals for Community action in a specific area. They sometimes follow a green paper published to launch a consultation process at European level. While green papers set out a range of ideas presented for public discussion and debate, white papers contain an official set of proposals in specific policy areas and are used as vehicles for their development.

Assuring that the EU has the highest standards of food safety is a key policy priority for the European Union. The White Paper on Food Safety reflects this priority. A radical new approach has been proposed. This process is driven by the need to guarantee a high level of food safety. Greater transparency at all levels of food safety policy is the thread running through the whole White Paper and will contribute fundamentally to enhancing consumer confidence in EU Food Safety policy.

The writing of a white paper on food safety was mainly driven by events and developments during the 1990s. The well-known dioxin and BSE crises have led to a whole new approach of risk management. The risks associated with the contamination of foods were brought into sharp focus by the dioxin crisis. Steps will be taken to address those areas where existing legislation needs to be improved to provide adequate protection. But also developments in the rulemaking process have led to new ways of dealing with food safety control. The experience of the Commission's own Food and Veterinary Office, which visits Member States on a regular basis, has shown that there are wide variations in the manner in which Community legislation is being implemented and enforced. This means that consumers cannot be sure of receiving the same level of protection across the Community, which makes it difficult to evaluate the effectiveness of national measures.

The White Paper proposes that, as a general principle, all parts of the food production chain must be subject to official controls. Responsibility for safe food production and control is shared between operators, national authorities and the European Commission. Operators are responsible for compliance with legislative provisions, and for minimizing risk on their own initiative. National authorities are responsible for ensuring that operators respect food safety standards. They need to establish control systems to make sure that Community rules are being respected and, if required, enforced. To ensure that these control systems are effective, the

Commission, through the Food and Veterinary Office (FVO), carries out a programme of audits and inspections. These controls evaluate the performance of national authorities against their ability to deliver and operate effective control systems, and are supported by visits to individual premises to verify that acceptable standards are actually being met.

One of the action points in the White paper is to develop a regulation on official food and feed safety controls. Earlier this year Regulation 882/2004/EC (of the European Parliament and of the Council of 29 April 2004 on official controls performed to ensure the verification of compliance with feed and food law, animal health and animal welfare rules) was published. This Regulation sets a Community framework of national control systems, which will improve the quality of controls at Community level, and consequently raise food safety levels across the European Union. The operation of such control systems remains a responsibility of the individual Member States.

3. The EU General Food Law, the legal basis of European Union food control

An important need mentioned in the White Paper was to create a coherent and transparent set of food safety rules. With the publication of the General Food Law (GFL), the European Union has made a new legal framework laying down the principles to ensure a coherent approach and to fix the principles, obligations and definitions that apply in the field of food safety. It defines the common principles underlying food legislation and the establishment of a food safety policy as a primary objective of EU food law. This Regulation also provides the general frame for those areas not covered by specific harmonized rules but where the functioning of the Internal Market is ensured by mutual recognition. Under this principle, in the absence of Community harmonization, Member States may only restrict the placing on the market of products lawfully marketed in another Member State when and to the extent that this can be justified by a legitimate interest such as the protection of public health and only when the measures taken are proportionate.

The General Food Law consists of three parts. The first part lays down the general principles and requirements of food legislation, the second part defines the establishment of the European Food Safety Authority and the last part lays down procedures in matters of food safety. Let us focus on the first part.

A general principle of food law is that operators in the feed and food business have the **primary responsibility** for food safety. Competent authorities monitor, enforce and verify this responsibility through the operation of national surveillance and control systems at all stages of production, processing and distribution. Member States are also obliged to lay down rules on measures and penalties applicable to infringements of food and feed law. They shall be effective, proportionate and dissuasive. The Commission concentrates on evaluating the ability of competent authorities to deliver these systems through audits and inspections at the national level.

A successful food policy demands the **traceability** of feed and food and their ingredients. This is an important requirement of the GFL. It includes the obligation for feed and food businesses to ensure that adequate procedures are in place to recall products that might pose a possible health risk. Operators should also keep adequate records of suppliers of raw materials and ingredients so that the source of a problem can be identified.

4. National implementation of the General Food Law

Regulations and directives in the framework of the General Food Law have to be transposed into national legislation of individual EU Member States regarding enforcement, sanctioning and the designation of the competent authority. Regulations are imposed directly on countries and need no further interpretation, while directives may be implemented according to national policies. For instance, in the national implementation of the General Food Law the penalties must be laid down to be applied if an operator does not have an adequate traceability system and the competent authorities for inspections and controls.

National implementation of EU law must fit into national structures, such as centralized and decentralized control structures. Therefore most EU food safety legislation focuses on criteria and procedures rather than on detailed regulations for control.

In addition to the legal implementation of EU legislation it is also necessary to put a national performance policy in place and to explain the meaning of this policy to the public. This process may give rise to questions that must be checked with other EU Member States and the European Commission.

In recent years many countries in the European Union have chosen to establish a National Food Safety Authority to contribute to higher food safety standards and more effective food safety control. These authorities comply with the requirements of the General Food Law but their establishment has never been obligatory. The responsibilities and tasks of these organizations may be quite different per Member State. In some countries their mandate is limited to risk assessment and scientific advice to the Government. In other cases their mandate includes risk communication and enforcement of food control regulations. Risk management tasks are usually kept in the hands of the responsible ministries.

5. Food safety control policies in the EU and its Member States

5a) General framework and coverage

Feed and food should be safe and wholesome. European Community legislation comprises a set of rules to ensure that this objective is attained. These rules on hygiene and safety extend to the production, processing and the introduction of food products on consumer markets.

The basic rules with regard to feed and food law are laid down in Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002, often referred to as the "General Food Law". This law lays down the general principles and requirements of food legislation, the establishment the European Food Safety Authority, and procedures in matters of food safety.

In addition to these basic rules, more specific feed and food laws cover different areas such as animal nutrition including medicated feeding stuffs, feed and food hygiene, zoonoses, animal by-products, residues and contaminants, control and eradication of animal diseases with a public health impact, feed and food labelling, pesticides, feed and food additives, vitamins, mineral salts, trace elements and other additives, materials in contact with food, quality and compositional requirements, drinking water, ionization, novel foods or genetically modified organisms (GMOs).

5b) Food safety responsibilities

Community feed and food law is based on the principle that feed and food business operators at all stages of production, processing and distribution within the businesses under their control are responsible for ensuring that products and manufacturing processes satisfy the requirements of feed and food law which are relevant to their activities.

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This principle of placing the main responsibility on producers can only work adequately, when effective and efficient government controls are in place. As a consequence all relevant information on the application of process controls, essential for safe food production, should be fully available for government control purposes. The same applies to information that is of importance for proper traceability.

The EU-Members enforce feed and food law and monitor and verify that the relevant requirements of law are fulfilled by business operators at all stages of production, processing and distribution. Official controls should be organized for that purpose.

The organization of the official controls differs to a large extent throughout the European Union, as a result of different historical backgrounds and traditions. The differences vary from a completely centralized system (the Netherlands, Denmark, Belgium) to decentralized systems where the competent authorities are working according to a regional (Spain, Germany) or local system (United Kingdom, Ireland).

5c) Harmonization and coherence

To achieve equivalent official feed and food control systems across Member States, the European Commission has chosen to establish a harmonized framework of general rules at Community level for carrying out such controls. For this reason Regulation No. 882/2004/EC on the official controls performed to ensure the verification of compliance with feed and food law, animal health and animal welfare rules and Regulation No. 854/2004/EC laying down specific rules for the organization of official controls on products of animal origin intended for human consumption have recently been adopted.

5d) National implementation and Community verification

In order to have a global and uniform approach with regard to official feed and food controls, EU Member States must establish and implement national control plans in accordance with broad guidelines elaborated at Community level. These guidelines should promote coherent national strategies, and identify risk-based priorities and the most effective control procedures. After developing these guidelines a Community strategy for a comprehensive, integrated approach to the operation of controls can be reached. Moreover, each EU-Member State has to present an annual report to the European Commission covering information on the implementation of the national control plans. This report is meant to provide:

- the results of the official controls and audits carried out during the previous year and,
- where necessary, an update of the initial control plan in response to these results.

The national control plans and the yearly reports will establish a solid basis for the European Commission Food and Veterinary Office to carry out controls in the EU Member States. The control plans will enable the Food and Veterinary Office to verify whether the official controls in the EU Member State are organized in conformity with the criteria laid down in these Regulations. If appropriate and in particular if the audit of a EU Member State against the national control plans shows weaknesses or non-compliances, detailed inspections and audits will be carried out.

Eventually Community controls in the EU-Member should allow the Food and Veterinary Office to verify whether feed and food law, and the legislation on animal health and animal welfare are implemented in a uniform and correct way throughout the European Union.

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5e) Imported goods

Regulation 882/2004/EC gives rules for the official control on the import of products from third countries. For this reason, Community controls in third countries are required in order to verify compliance or equivalence with Community feed and food law. Third countries may also be requested to establish control plans similar to those intended for Member States, in respect of the feed and food exported by them. These plans, which must be established on the basis of Community guidelines, should form the basis for subsequent Commission controls, which should be carried out within a multidisciplinary framework covering the main sectors exporting to the Member States. This development should allow a simplification of the current control regime, enhancing effective control co-operation, and consequently facilitating trade flows.

To help developing countries in setting up official feed and food control systems equivalent to the control systems in the European Union, it is appropriate to identify and consider the special needs of those countries. The EU is committed under Regulation 882/2004 to support developing countries with regard to feed and food safety, which is an important element of human health and trade development.

Besides this Regulation, there is a specific Regulation No. 854/2004/EC for the organization of official controls on products of animal origin intended for human consumption. The purpose for a specific official control procedure for these products is that specific sanitary rules must be complied with here (Regulation No. 853/2004/EC).

The Member States are aware of the need to harmonize control procedures of imported goods across the European Union. There is a need for setting detection limits of certain residues in food products in order to facilitate uniformity of procedures and sanctioning at all European border posts.

6. Organization of official feed and food control according to European legislation

6a) General requirements

A EU Member State must designate competent authorities to carry out official controls. If a Member State has different competent authorities, it must ensure efficient and effective coordination between these authorities. To harmonize the verification of compliance with legislation, specific operational criteria are prescribed. Thus competent authorities must:

- ensure their impartiality and effectiveness;
- have a sufficient number of suitably qualified and experienced staff and possess adequate facilities and equipment to carry out their duties properly;
- carry out the official controls using appropriate techniques developed for that purpose, including routine surveillance checks and more intensive controls such as inspections, verifications, audits, sampling and the testing of samples;
- establish regular frequency of official controls proportionate to the risk, taking into account the results of the checks carried out by feed and food business operators under HACCP based control programmes or Quality Assurance Programmes, where these are designed to meet requirements of feed and food law;
- carry out ad hoc controls where businesses are suspected of non-compliance with feed and food law;
- carry out official controls on the basis of documented procedures so as to ensure that these controls are carried out uniformly and are of consistent high quality;

- ensure that laboratories involved in the analysis of official samples work in accordance with internationally approved procedures or criteria-based performance standards and use methods of analysis that have as far as possible been validated;
- ensure that adequate financial resources are available for organizing official controls. Where for that purpose fees are imposed on feed and food business operators, common principles should apply;
- with regard to fees applicable for import controls, establish directly the rates for main import items with a view to ensuring their uniform application and to avoid trade distortions;
- Breaches of feed and food law may constitute a threat to human health, animal health, and animal welfare. Such breaches should therefore be subject to effective, dissuasive and proportionate measures at national level throughout the Community and must include administrative action by the competent authorities, in the Member States who should have procedures in place for that purpose;
- Legal persons/corporations should also be subject to effective, dissuasive and proportionate penalties, because breaches of Community law to a large extent are committed in the interest of legal persons/corporations or for their benefit;
- Feed and food business operators must have a right to appeal against the decisions taken by the competent authority as a result of the official controls, and be informed about such right.

6b) Specific requirements

With regard to the official controls on products of animal origin more specific requirements have to be met. These requirements concern:

- the approval of production establishments;
- the check of certain aspects and features;
- the role of the official veterinarian and official auxiliaries;
- the introduction of specific requirements for different types of products of animal origin.

The new legislation specific for products of animal origin is mainly based on pre-existing traditional "veterinary" rules, while at the same time new HACCP rules are coming into force. Whether these two quite distinct legislative approaches go well together has not yet been clearly documented. The traditional veterinary approach is labour intensive and relatively costly however, it does not seem to be scientifically based in all cases, nor focused on the most relevant human health risks.

7. The role of private food control systems

7a) General remarks

Private control systems have an important impact on the food safety systems as a whole. They can be divided into two different types:

- Private control on official standards and procedures;
- Private control on private criteria and quality schemes.

The first type may be helpful for governmental control bodies and for companies to meet standards. In this case the government verifies that the private controls and control bodies are reliable. Accreditation of certifying control bodies is a usual method for reliable verification.

Internal control systems in production facilities, such as an (obligatory) HACCP system, may play an important role in the reduction of food safety risks.

The private sector may also require criteria and quality standards from their suppliers, not based on official standards. These non-official requirements are meant to further strengthen the confidence of consumers. In responding to the demands of consumers, retailers and their global suppliers have created and implemented a series of sector specific farm certification standards in the EUREPGAP quality schemes. The aim is to ensure integrity, transparency and harmonization of global agricultural standards. This includes the requirements for safe and high quality food, respect for workers' health, safety and welfare, and environmental and animal welfare issues.

7b) The International Standardization Organization (ISO)

Regulation 882/2004 states that the frequency of official controls should be regular and proportionate to the risk, taking into account the results of the checks carried out by feed and food business operators under HACCP based control programmes or Quality Assurance Programmes, where these are designed to meet requirements of feed and food law. At present ISO is working on a specific standard on food safety management system (ISO 22.000). This international standard specifies requirements for a food safety management system in the food chain where an organization needs to demonstrate its ability to control food safety hazards in order to consistently provide safe final products. These both meet agreed customer and applicable regulatory food safety requirements, and aim to enhance customer satisfaction through the effective control of food safety hazards, including processes for updating the system. This international standard specifies requirements to enable an organization to:

- plan, design, implement, operate, maintain and update a food safety management system aimed at providing final products that, according to their intended use, will ensure that the food, when eaten, is safe for the consumer;
- evaluate and assess customer requirements and demonstrate conformity with those mutually agreed customer requirements that relate to food safety;
- demonstrate effective communication with customers and other interested parties across the food chain;
- demonstrate conformity with applicable regulatory requirements as regards food safety;
- assure that it complies with its stated food safety policy;
- demonstrate such compliance to other interested parties;
- seek certification or registration of its food safety management system by an external organization.

All requirements of this international standard are generic and intended to be applicable to all organizations wishing to design and implement an effective food safety management system, regardless of type, size and product provided. This includes organizations directly involved in one or more steps of the food chain (for example, but not limited to feed producers, farmers, producers of ingredients, food producers, retailers, food services, catering services, organizations providing cleaning, transportation, storage and distribution services) and other organizations indirectly involved with the food chain (such as suppliers of equipment, cleaning agents and packaging material and other food contact material). ISO 22000 follows the structure and approach of ISO 9001 on quality management and integrates this with food safety on the basis of HACCP, developed by the Codex Alimentarius Commission.

7c) Verification of delegated control activities

In premises where adequate and effective control systems exist, the frequency of official inspections may be diminished. Private control systems, like certification bodies, may help the competent authorities to perform their control tasks. However, it is important that the competent authorities actively verify the quality of those organizations and their activities. The Regulation gives the possibility that competent authorities delegate tasks to external control bodies under strict conditions. The main restrictions include:

- external control bodies cannot impose sanctions, which means that in case a control body finds non-compliance they should warn the competent authority;
- external control bodies should carry out their tasks in line with the description and conditions laid down;
- external control bodies should have the expertise, equipment and infrastructure required to carry out the tasks delegated to them;
- external control bodies should have sufficient numbers of suitably qualified and experienced staff;
- external control bodies should be impartial and free from any conflict of interest as regards the exercise of the tasks delegated to them;
- external control bodies should work and be accredited in accordance with European Standard EN 45004 "General criteria for the operation of various types of bodies performing inspection";
- there should be efficient and effective co-ordination between the delegating competent authority and external control bodies.

Competent authorities that delegate tasks to external control bodies are obliged to organize audits. When repeated non-compliance is found and external control bodies fail to take appropriate and timely remedial action their tasks will be withdrawn without delay.

8. The European Food Safety Authority

Following a series of food safety crises in the 1990s (e.g. BSE, dioxins) which undermined consumer confidence, the European Union concluded that it needed to establish a new scientific body charged with providing independent and objective advice on food safety issues associated with the food chain. Its primary objective as set out in the White Paper on Food Safety would be to: "... contribute to a high level of consumer health protection in the area of food safety, through which consumer confidence can be restored and maintained". After the publication of the General Food Law this resulted in the establishment of the European Food Safety Authority (EFSA).

Set up provisionally in Brussels in 2002, EFSA provides independent scientific advice on all matters linked to food and feed safety - including animal health and welfare and plant protection - and provides scientific advice on nutrition in relation to Community legislation. The Authority communicates to the public in an open and transparent way on all matters within its remit. EFSAs risk assessments provide risk managers (consisting of EU institutions with political accountability, i.e. European Commission, European Parliament and Council) with a sound scientific basis for defining policy-driven legislative or regulatory measures required to ensure a high level of consumer protection with regards to food safety.

EFSA was born from Parliament and Council regulation (EC) No 178/2002 of 28 January 2002. The new Authority quickly found its feet, organizing its first Management Board meeting nine months later. Shortly afterwards it nominated its first Executive Director and created the

Advisory Forum, made up of representatives from food safety bodies in the EU Member States. Momentum grew in 2003 as EFSA developed into a fully-fledged independent European Union agency. EFSA truly opened for business in May with the establishment of its Scientific Committee and Panels. World-class scientists from all over Europe were appointed to eight Panels, covering everything from food additives to animal health, and to a Scientific Committee with oversight of these panels.

In July 2003 a Chair of the Scientific Committee, a Deputy Director General, a Director of Science and a Director of Communications were appointed; the first scientific opinion related to GMOs was published. By December last year, the Authority employed around 70 people and already had over 120 registered scientific questions with confirmed deadlines to address in its working programme.

Staff numbers are expected to double during 2004, as EFSA continues to expand and prepares to establish itself permanently in Parma, Italy. Overall capacity building will continue, enabling the Authority to meet working programme commitments including the significant expansion of both its scientific and communications activities as well as the development of its institutional, stakeholder and international relations.

EFSA is now dealing principally with requests for risk assessments from the European Commission and plans to take on a wider brief from other European institutions in the near future. Notwithstanding the important needs of its key customers, EFSA is already undertaking its own work in order to look ahead and address broader issues of importance to its mandate. For example, through such "self-tasking", the Authority's Scientific Committee has initiated work in relation to the identification of emerging food safety issues. Website: http://efsa.eu.int/

9. Future developments

The European Union will review and further elaborate the legislation mentioned in the White Paper in the field of animal feed, animal health and zoonoses, animal by-products, contaminants and additives, labelling, pesticides, healthy food, plant reproduction materials and international relations.

International agreements, such as SPS and TBT, and standards and guidelines of international organizations, like Codex Alimentarius, the World Organization for Animal Health (OIE) and the International Plant Protection Convention, will continue to have impact on policy processes in the European Union.

The European Union will develop a more harmonized approach to verify the effectiveness of the official controls in the EU as well in third countries.

In special cases, direct controls and inspections of food performed by Governmental bodies, may evolve to Governmental supervision over accredited control bodies. In the further development of food chain control, process control systems will further improve and checks of final products will lose importance, although not entirely.

10. Conclusions

1. Food operators are entirely responsible for the quality and safety of the food they produce and provide to consumer markets. Food safety legislation and control are meant to impose this responsibility and to verify that all policy conditions are adequately met;

2. Food safety legislation in the European Union Member States is largely harmonized under Community law. A new policy approach has been introduced after food scares in the 1990s. It is based on risk analysis and complies with principles of the SPS Agreement of WTO. Therefore it is closely connected to the standards, guidelines and recommendations developed by the Codex Alimentarius Commission;

3. The harmonization process has strongly reduced the former policy differences between individual Member States and contributed to higher transparency of the European Union importation system and consumer markets. Control procedures and sanctions however, have not yet been fully harmonized;

4. Harmonization of food control in the EU is based on specific criteria and not on control structures. There should be one specific template for an official control structure, which takes into account a country's historical backgrounds and economic circumstances. Official controls should be fitted to the national food safety framework;

5. Imported goods have to comply with the internal EU standards. Exporting countries with well-organized official control structures will meet the EU requirements more easily than countries without it;

6. For developing countries and economies-in-transition technical assistance and capacity building in the field of food legislation and control are valuable tools to enhance the international trade of safe and wholesome food products.

Agenda Item 4.3 GF 02/6

SECOND FAO/WHO GLOBAL FORUM OF FOOD SAFETY REGULATORS
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Training personnel of official food safety control services

(Prepared by the Ministry of Agriculture, Food, Fisheries and Rural Affairs – National School of Veterinary Services, France)

I. Introduction

Vocational training is not an objective *per se* but a tool for policy implementation in a given administrative and juridical framework. The context determines needs, constraints and solutions.

Any focus on the training of personnel in the food safety control services of different countries of the world requires an insight into their operational context and key developments. The organizational structures and areas of competence of these services are also decisive in determining training responses. We need to go beyond national particularities and discern elements of common interest in order to describe the existing situation and, above all, in order to fuel thought to the future.

The international standards of the Codex Alimentarius and OIE[1], which have served as the WTO[2] framework of reference since 1995, have converging provisions on the quality of official control and inspection services and on the status, competence and training of personnel, especially regarding official certification[3]. These texts are cited more in terms of objectives to be reached than means to be implemented.

For the purposes of this paper, official food safety control is defined as all the operations conducted by official services set up to verify and guarantee the conformity of food products with established standards in order to prevent risks to public health. It covers food produced and marketed domestically, as well food imported or intended for export (health certification). It covers all phases of production, processing, storage, transport, sale and final consumption. It comprises numerous operations, including inspection, verification of records, sampling, laboratory analysis, control of staff hygiene, audits and the checking of self-policing systems. Laboratories are not themselves covered because of the highly specific nature of issues relating to competence of laboratory staff.

A large number of structures are in some way involved in a field as complex as the control of food safety. For purposes of simplification, this paper will only deal with specialized food safety services, such as veterinary services, although a similar approach can be deduced by analogy for other services.

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[1] World Organization for Animal Health/International Office of Epizootics

[2] World Trade Organization

[3] Cf. Codex Alimentarius, Guidelines CAC/GL N° 26 (&24 *et seq.*, &43, &47, Annex), CAC/GL N° 34 (Annex) – OIE: Terrestrial animal health code (Chapter 1.3.3: Evaluation of veterinary services)

The tendency in food safety is to have measures covering the whole production and distribution chain: "from farm to fork" or from upstream (animal feed, veterinary drugs and phytosanitary products) to downstream (the consumer). This review only looks at services relating to food itself – from the time of harvest for crops and the moment of slaughter for animals, when food safety services are not organized holistically.

II. International And Societal Context: Basic Developments

Food safety concerns have intensified throughout the world in the past 15 years. The operational context of control services has undergone and is undergoing profound change in a framework of greater international connectivity. The following elements can impact strongly on training needs or policies:

(1) Increased media and consumer awareness, linked in particular to highly publicized cases of food contamination or crisis in developed countries and the emergence of new worrying phenomena (bovine spongiform encephalopathy, genetically modified organisms, dioxins…).

(2) The globalized impact of health issues because of increased trade, the complexity of production and distribution channels, the spread of non traditional consumption practices...

(3) The lowering of customs barriers and the resulting implications of safety obstacles to trade, especially with the opening of certain national markets to hitherto non-competitive imported products.

(4) The increasing harmonization of international requirements since the WTO SPS and TBT[4] agreements came into effect. This principle of harmonization encourages countries to adopt national measures that mirror international standards, such as those of the Codex Alimentarius or the World Organization for Animal Health.

(5) The tightening of health standards in the North which raises international requirements:

- the refocusing of safety control methods and traditional examination of the finished product (with the discard of sub-quality products) towards preventive management through control of the production process (in particular the HACCP[5] method);
- the blanket application of safety to the whole production chain, "from farm to table" (cf. BSE, mycotoxins, salmonella, residues and contaminants...);
- the transfer of primary responsibility for product safety to producers, with the State exercising second-level control.

(6) New interest in the role of end consumers, both as individuals and as a political force, through their associations and the media.

(7) The increasingly complex role of scientists because of the documented approach to risk analysis, the appropriation of scientific debate in trade disputes, media attention and more frequent application of the precautionary principle.

(8) The heavy impact of these developments on the developing and least developed countries, that for a long time, understandably, viewed food safety as a concern of the developed countries and of secondary importance to their economic and public health priorities (widespread

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[4] Agreement on Sanitary and Phytosanitary Measures – Agreement on Technical Barriers to Trade.

[5] Hazard Analysis Critical Control Point

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epidemics, water). Concern for their food self-sufficiency had emphasized the importance of upstream production (animal and plant health) with the health control of foods of animal origin limited almost exclusively to post-slaughter inspection at the abattoir. These countries are now faced, internally, with (i) a change in production and consumption patterns (rural migration, rapid urbanization, food consumption outside the home…) representing a break from ancestral culinary traditions (cooking, drying…); (ii) the arrival on the market of imported products hitherto non-competitive because of tariff barriers…; (iii) poorly structured or indeed totally disjointed production and distribution channels, with poorly educated operators; (iv) and, at the same time, a number of highly qualified operators adopting modern techniques and employing personnel trained overseas (multinationals, export companies, the tourism sector, large retail outlets).

III. Administrative Organization: The framework of action

The competences that need to be developed among control staff are determined by the objectives, mandate and organization of the service concerned.

The way food safety control services are organized varies widely between countries and many different structures are in some manner involved. Different organizational possibilities and the combination of options will determine training needs.

(1) The degree of vertical integration:

- either the same service carries out integrated control of the whole food production chain (within a ministry or agency). In practice, such integration is often incomplete, not covering all stages [6] or all products[7];
- or responsibilities are separated between upstream (primary production: animal health, crop protection) and downstream (processing), with the division at the slaughterhouse or harvest level.

Many countries have recently reorganized their administrations to have a single structure controlling the whole food chain.[8]

(2) The administrative configuration:

- centralized States, whose field services are devolved from the central administration, have a single chain of command;
- in a majority of federal or decentralized States, control is exercised by administrative subdivisions, sometimes at different levels (states, regions, districts, municipalities…), with or without hierarchical link between the central State and the territorial echelons, with or without vertical and horizontal coordination; they can also have significant regulatory and/or budgetary autonomy;
- in contrast, some decentralized States maintain central or federal responsibility for food safety.

(3) Coordination is organized very differently, whether between ministries over the same territory or between different territorial levels. It might be non-existent, informal or institutionalized (cooperation protocols, institutional lead agency…).

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[6] The control of sales outlets is often the responsibility of a different administration.

[7] Crops and fishery and aquaculture products might be the responsibility of a different structure.

[8] For example: Austria (2002), Belgium (2003), Bolivia (2000), Canada (1997), Spain, Netherlands.

(4) The delegation of selected control: control is seen as a prerogative of the central authority and is usually exercised as such by the administration (more rarely, by independent public agencies). Some countries, however, delegate selected control to private structures that are formally recognized by the administration.

(5) The distribution of responsibilities: under the traditional approach, responsibility for product safety is borne by the official services exercising first-level control over the finished product and, perhaps, production conditions. This continues to be the approach in many countries, at least for the domestic market.

At an intermediary level, operators are responsible for the quality of the products they market, with first-level control remaining in the hands of the official services.

Finally, the present trend is towards a division of responsibilities among: (i) operators responsible for the safety of their products and required to employ preventive measures, notably HACCP related; (ii) public authorities exercising second-level control and checking the measures taken by the operators; (iii) even consumers, given the importance of the post-purchase phases (conservation and preparation) for the maintenance of food safety.

All intermediary situations exist in reality and changes on the ground can only be introduced progressively.

(6) The above points to the following areas of frequent vulnerability:

- intervention at the limits of responsibility of different services (upstream/downstream);
- overlapping of service jurisdiction, all the more noticeable with a vague juridical framework;
- the absence of a culture of collaboration among services;
- the decentralization of control (except with highly organized collaboration) because of:
  - significant divergences between regions in terms of strategy, interpretation, density and quality of control, and in terms of training and culture of control agents;
  - the influence of local politics, especially where control agents and particularly supervisory staff are appointed by the local authorities;
  - divergences between local and national priorities;
  - difficulty in coordinating actions involving several adjacent subdivisions;
  - inadequate feedback to the central level.

IV. Control Staff

The control services employ different categories of staff. The terminology employed and the corresponding levels of training and responsibility vary enormously among countries.

For purposes of simplicity, there are two broad categories of staff or agent:

- officers, veterinary doctors (very widely represented, especially in the veterinary services), experts (in livestock production, fisheries, food processing, public health), microbiologists, chemists, jurists and, more rarely, doctors;

- support staff, technical agents and inspectors or other field agents with extremely diverse levels of education, sometimes very numerous, sometimes very few, depending on the country; some hold intermediary responsibilities.

Some of the characteristics of status of these agents impact on training policy.

Status and recruitment

Control agents are usually civil servants (or the equivalent with indefinite contracts), in application of the principle of independence of public service from political or economic pressure. However, in some countries supervisory staff are contracted privately, in which case their appointment and retention depends on the political authority. Recruitment in the decentralized States is often at regional or local level for the technical agents (civil servants), and sometimes also for the supervisory staff. Elsewhere, many countries employ part-time freelancers to make up control staff numbers, particularly for slaughterhouse inspection (veterinarians). But these do not represent the backbone of the system, even though there are countries where a majority of agents are employed on a part-time basis, with the attendant risks of conflict of interest.

Mobility and career development

Under certain systems, thematic and/or geographical mobility is possible, encouraged or even mandatory for promotion, especially for supervisory staff. This is facilitated under national recruitment systems and in services with broad responsibilities. It is a factor of motivation, fostering the harmonization of practices and coordination. In contrast, the possibilities of mobility are few or indeed nil in systems that are based on local recruitment and in services that have very narrow remits. Although these foster stability and capitalization of know-how, they nevertheless incur the risk of lethargy, demotivation and indeed collusion. Finally, the extensive random mobility that takes place in certain countries with the occurrence of political change is clearly a destabilizing element for control staff and services.

V. Forms of Training

V.1 Prior and post-recruitment initial training

Prior initial training designates the level required for recruitment. *Post-recruitment* or *occupational* initial training is training provided by the employer before taking up duties.

a) Supervisory staff

Prior training

All countries require a certificate of higher education for entry at supervisory level (generally BAC[9] + 5 or 6). Candidates have thus acquired a good general scientific base at university level. In most cases, this qualification is sufficient for recruitment, although some professional experience in the private sector is sometimes also required.

However, deficiencies are often noted, undermined effective performance in the official services.

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[9] BAC: High-school diploma

For example, veterinarians trained as clinicians and pathologists have a very diverse understanding of food hygiene. Some universities provide advanced education in this area while others barely touch upon the subject. Disparity between countries is sometimes compounded by differences between universities within the same country, or between veterinarians trained abroad in different countries. To overcome this, some countries have made it mandatory that applicants should have attend selected veterinary university courses to be eligible for public service or to qualify for higher posts. Others resort to post-recruitment training.

Post-recruitment training

This training, which is organized and paid for by the employer, is intended to supplement prior scientific training with the specific technical and administrative expertise that is required for public service in the food safety sector.

This form of training is unknown in many countries, where learning occurs on-the-job. Some services run short training sessions, lasting a few days to a few weeks, to present the central administrations and outline the legal dimension. The practice of setting a 6, 12 or 24 month probationary period before job confirmation is frequent, with or without associated short training, and sometimes with tutoring.

There appear to be very few countries that provide long-term post-recruitment training for their civil servants. In France, veterinary officials in the veterinary services have been trained in the specialized post-graduate National School of Veterinary Services (ENSV) since 1973. This training, open to foreigners, lasts one to two years and covers technical aspects (HACCP, environment, epidemiology, quality assurance), administrative matters (law, economics, international politics) and management. It prepares the ground for a range of appointments.

Such training meets the requirements of a new regulation adopted in 2004, governing the recruitment of official veterinarians. These have to pass an examination on a wide range of technical and administrative subjects (the actual training modalities are left for the Member States to decide) and have received 200 hours of tutored practical training.

b) Support staff

The differences in approach to supervisory staff also apply to support staff, depending on the administrative culture of each country.

Prior training

This varies considerably: from recruitment with a university diploma (BAC+2), to a high-school diploma (BAC), to no initial qualification. Assigned responsibilities also vary. Some countries have job specifications for public posts which help determine the "appropriate training" for each individual post.

Post-recruitment occupational training

Post-recruitment training is far more common for this category of staff and generally focuses on a specific area of control (e.g. inspection at slaughterhouse). It rarely covers all potential fields of assignment.

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The European Union's new regulation specifies that these agents should receive 600 hours of theoretical training (the programme is given) and 300 hours of practical training before sitting the qualifying examination. The duration of training will be increased to 1400 hours in 2010.

V.2 Staff development training

Staff development or intermittent training serves to keep agents abreast of technical or administrative developments or to enable their career advancement.

It does not exist in many countries, especially developing countries. At most, *ad hoc* training modules are included in bilateral or international cooperation programmes.

When such training is organized, the basic format is generally a session lasting a few days and focusing on a specific occupational theme.

The perception of staff development varies considerably. Some countries include it in a global policy of institutional training, with annual or even multi-annual programming organized by the employer ministry. The training sessions are either organized directly by the administration or commissioned from universities, specialist schools or vocational associations, following tailored specifications. This approach, which is easier to adopt in a centralized State, also exists in a number of decentralized States which view the training of staff in administrative subdivisions as an instrument of guidance and coherence.

This training often occurs in a less coordinated manner, especially when responding to market forces and the logic of supply. The sessions, paid by the employer or the staff themselves, are organized by universities or laboratories. However, they do not always convey the institutional line-of-thinking and might sometimes transmit divergent messages.

In the decentralized States, each administrative subdivision often designs its own actions based on its own policy, without vertical or horizontal harmonization.

Participation in training courses organized by other countries or in training at international level is an intrinsic ingredient of training policy of certain countries, especially in small countries that depend on the availability of training in their neighbouring countries.

Staff development training can be optional and free of charge to the agent, and might even represent a right rather than a duty. On the other hand, it is sometimes mandatory, even if only in principle, for certain courses, with a minimum number of days of training required each year and even a system of points to be accumulated over a given period. It might also be required for access to certain jobs.

The employer generally covers the cost, although some systems require the staff to pay for all or part of the mandatory training.

VI. Considerations

All the above points have a direct or indirect bearing on training policy: the general context, the organization of the different services, the status, mobility and conditions of recruitment.

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Observation: The focus here is on the training of supervisory staff, unless specified otherwise, because their higher responsibilities and mobility make them a more complex group. The situation for other staff can be deduced by analogy.

Limits

The training of food safety controllers occurs in a determined political, economic, social, institutional, financial and juridical context. It cannot make up for inadequacies of infrastructure (slaughterhouses, laboratories), of personnel, of resources (vehicles and fuel, thermometers, computers…) or of funds, nor can it mitigate the constraints of a given political or territorial structure. Any consideration needs to take these limits into account, especially when setting the thematic and organizational priorities and planning the way forward.

Some prerequisites seem however essential, especially a demonstrated political will, a structured juridical framework (including the distribution of responsibilities among services, the powers given the controller, etc.), available and updated documentation and standards, and a clear institutional policy to be conveyed (training transmits, but does not generate, knowledge).

Objectives

The primary objective of training is to enable staff to acquire the knowledge, tools and "soft skills" (self-management skills) needed to carry out their missions in their respective service of assignment.

The impact of training can however also be perceived on another level.

If properly directed, training is a **service management tool**. It is the prime vector for the transmittal of values and a shared culture and for the capitalization of know-how. It should aim to standardize practices and have these develop uniformly. By fostering mutual understanding and a common perception of inherent implications, training facilitates exchange between the central administration and its territorial services or subdivisions. It helps decompartmentalize the action of individual services. Key features include post-recruitment training, workshops for the exchange of practices, the mixing of staff development audiences (services, ministries…) and of training facilitators (speakers), etc.

Training is also an excellent tool for **human resources management**. The primary objective is to provide staff with the wherewithal for effective, appropriate and thus worthwhile action. Providing cost-free training or making training mandatory (especially for target courses) are fundamental decisions. Consultation and needs analysis will be arranged to secure staff input. Training can be taken into consideration for promotion, remuneration, mobility….

Training opportunities

In summary terms, two types of knowledge need to be transmitted[10]:

- the scientific and technical knowledge of a veterinarian or expert for example, which might need to be completed or strengthened;
- professional know-how relating to specific areas of public control (law, economics, international affairs, inspection procedures…).

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[10] Without ignoring their importance, management and non-specific personal skills are not addressed.

These two types of knowledge can be acquired through three principal routes (section V): prior initial training, post-recruitment training and staff development training.

Scientific and technical knowledge

In theory, the employer can set the level required for recruitment. For example, the employer can insist that applicants have attended a specific veterinary university course, where such a course exist. There is also leverage on the content of university training in the form of international recognition of its diplomas.

In practice, recruitment is influenced by the university teaching available and by the attraction of government service to young graduates. In most countries, shortcomings noted at recruitment point to a need for supplementary training.

A number of solutions can then be envisaged, depending on the context. The first requisite is that staff should have the scientific background to thoroughly grasp the issue of food safety and sanitary production. Veterinarians can be relatively easily trained in the safety of animal-based foods because of their initial training in animal husbandry, anatomy, pathology, physiology, microbiology…

Post-recruitment training is the most common way of bringing staff up to the required level. Ideally, this should be sufficiently long to permit field training in consolidation of the theoretical instruction. The further training can focus on a specific field or type of food if the position to be filled is known.

Specialized training for public officials

Public officials need to have administrative and soft skills in addition to their technical training. These refer to civil, administrative and penal law, economics, finance, national and international public policy.

A period of training close to recruitment offers a number of advantages in terms of effectiveness and the moulding of professional identity. If sufficiently long, such training provides supplementary tools and indicators, instils a service-wide culture and facilitates subsequent mobility and refresher training. If short, it will target skills of immediate necessity. The limit is of course the cost to the administration, regardless of whether the new recruits are paid or not during their training.

Staff development training

Refresher training has become essential in an environment of constant scientific, technical, regulatory, international and other development.

The traditional concept of staff development is gradually adopting the notion of lifelong learning. Training acquired at the start of professional life will not be sufficient to perform effectively throughout a career because of knowledge and occupational developments. Training is thus conceived, from the very outset, as requiring further input during the course of a professional career.

In practice, this training is often along traditional lines, with short, target-specific sessions and rarely any diploma. When there is a need for, or emphasis on, more substantial staff development training, this will be based not only on new requirements, but also on the previous training of staff so that their basic competence can be brought up to date.

Organization

Training structures

Adult training has special characteristics. Beyond conveying an academic or institutional message, the theory needs to be followed up with practice if there is to a long-term impact on performance. This means taking staff expectations into account as well as employer needs. The training can be entrusted to a specialized body which will be in a better position to accommodate the demands of both parties. The employer will define the benchmark competence (the skills needed) while the training body will translate these into an appropriate instruction programme (the learning needed to acquire the skills).

Formal recognition of acquired competence (diploma) can be envisaged if the training is sufficiently long.

Training facilitators

Whether initial training or staff development, and whether organized by an administration, a university or a public administration school, it is very enriching to have a variety of course facilitators: lecturers in life sciences (veterinarians, technologists, hygienists, toxicologists, nutritionists, biochemists…), in law, economics, management, social sciences; representatives of administrations (the umbrella ministry, but also from the ministry of justice, trade, finance, the interior…); researchers; private operators…

Training trainers within the control service, who will be expected to give regular training, will help to spread the training sessions. The trainers will be selected for their specialist skill and their motivation and will receive instruction in face-to-face training. They will need to use standard materials so that the training message can be coherent (transparencies, slides, trainer manual, course book…).

Workshops on the exchange of practices on a given topic (e.g. crisis management) serve to build upon knowledge gained and enrich experience.

Training on the ground

In most cases, staff are only trained for their new post through actual on-the-job exposure. Such empirical training risks perpetuating bad habits, mistakes, compartmentalization and divergent approaches among services. It is worst in those small services, especially in developing countries, where a single poorly trained and inadequately equipped official is assigned to a remote region; he or she would have benefited from advanced training to deal with the host of tasks and responsibilities that go with the job…

Minimal acculturation can be acquired by spending time in a reference service, especially in the central administration.

Tutoring is another way of training new staff. Tutors should be volunteers and if possible selected from outside the service hierarchy (perhaps from another service) and need to be specially trained.

Where veterinary or other officers are responsible for providing initial or further training to their support staff (after having themselves been trained), it is important that this should be properly structured. The constraints lie in the absence of trainer training and in the inability of trainers to step back into the wider picture.

Materials – remote training

Training materials are clearly essential, whether for self-instruction or for in-person training. Many developments are expected from information and communication technologies (ICTs), although their actual content will have to be carefully designed. Remote training does not usually exempt in-person training. One current prohlem that developing countries face is the availability and fragility of computer equipment.

Nor should traditional printed materials be neglected, especially for officers used to self-instruction (normative texts, explanatory notes, books).

There will need to be complementarity between traditional techniques and new ICTs.

Sharing of training

Training is relatively costly, whether for a restricted audience or for broader dissemination. Hence the importance of rational decisions, the search for leverage, the dispersal of delivery… Several options have been considered above (trainer training, hierarchical training, tutoring, new ICTs, participation in training organized by other countries…).

The supranational organization of training is another possibility. This might be:

- the organization, by a national structure, of training for an international audience;
- the networking of national structures, with a distribution of disciplines, exchanges between facilitators, etc;
- the most successful approach, the joint organization of training for a group of countries or a region.

A regional approach to food security training has been considered by the countries of sub-Saharan Africa and donors. This approach, which is mirrors the creation of common regional markets, is sustainable in nature as removed from the influence of national political change. The eventual creation of a regional body of food safety veterinary inspectors in the WAEMU[11] is a case in point. The Inter-State School of Veterinary Sciences and Medicine in Dakar (EISMV) already provides initial training for veterinarians of the region.

Observation: The developing countries sometimes have to cope with an alarming lack of resources, while most services exercise first-level control. Even though application of the academic HACCP approach does not correspond to traditional practices, using the rationale of the HACCP to identify priority problems and effective solutions can produce results – provided staff are properly trained and there is an appropriate regulatory framework. This would provide a methodology that applies to two major dimensions of food safety regulation, which are sometimes quite distinct in the developing countries: on the one hand, the economic impact, especially in the framework of international trade; and on the other, public health, especially at local or regional level. Such consideration and any resulting innovative training would no doubt be best handled at the supranational level.

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[11] WAEMU: West African Economic and Monetary Union

Topic areas

The fields of expertise relating to food safety vary extensively. Training topics will need to be selected through multi-factor analysis, including, for initial post-recruitment training, the economic context, existing legislation (for example, first or second level controls), possible subsequent assignments, starting level, expected professional competence (occupational benchmark) and available training resources. A similar approach applies to staff development training, with the inclusion of possible multi-annual planning.

Targeted expertise will depend on individual situations:

- command, for tools and know-how needed for assigned missions;
- knowledge, for technical elements not used in everyday practice but where intelligible discourse is required with highly qualified operators or colleagues;
- awareness, for the more general elements.

For example, a field inspector will need to be able to draw up a report, whereas a worker at the central administration will only need a basic knowledge or even awareness. Similarly, an international negotiator will need to be well versed in the SPS agreement (i.e. have command) while a field inspector will only have to be aware of its existence.

Selected examples by way of indication:

Technical knowledge (perhaps focused on a specific line or phase of production):

- *basic scientific training in life sciences, including general microbiology, biochemistry...*
- *agrifood technologies*
- *risks associated with foods, food microbiology, general food hygiene, physical and chemical contaminants*

Depending on the situation and country or region:

- *new technologies, new forms of production, conservation or consumption, new products (especially imported) and associated risks*
- *emerging risks and their management (mycotoxins, BSE, dairy production in hot countries, pesticides and leafy vegetables...)*
- *integrated approach to risk throughout the food chain*
- *HACCP and its inspection procedures*
- *risk analysis (in line with Codex Alimentarius)*
- *etc.*

Administrative knowledge:

- *law applied to the public sector (administrative, civil, penal law)*
- *quality assurance in the control services*
- *inspection methodology – programming of controls...*
- *international (regional and world) context, existing agreements and implications for the country...*
- *economics of agrifood production, agricultural policy*
- *public finance*

Soft skills:

- *the inspection function and relations with operators*
- *human resource management, management, foreign languages (non specific)*
- *communication, relations with the media, with consumers*

- *crisis prevention and management*
- *sociology of food – relationship between citizens and their food*

VI. Conclusion

Except in extreme cases, the value of a structure resides primarily in its staff. Investing in human resources and especially in initial training and staff development is the foundation of management of a control service.

Training is a means of achieving the objectives assigned a structure or control system. It is closely linked to the context and especially the financial constraints. Thus, while general guidelines can be traced in absolute terms (for example, lengthy post-recruitment training), these are often illusory as too costly, especially in developing countries. There is no universal answer, only lines of action and solutions tailored to each national or regional situation.

One prominent feature of food security is the global context which, since the rupture from the entry into effect of the WTO agreements, has tended to align approaches (professional accountability, HACCP, second-level controls, etc.) and thus to create common concerns. Shared training needs could encourage exchanges, even the introduction of innovative solutions at supranational level.

The developing and least developed countries are particularly vulnerable in the areas of public health and thus food safety: sanitary and climatic conditions combine with traditions and a lack of resources and qualified personnel. Such characteristics need to be taken into account in the context of globalization of trade. With regard to training, this is where there is even more call to start from concrete requirements on the ground and to respect cultural norms, if there is to be a lasting tangible impact.

Many countries rely on skills gained during initial training for their official controls, but these do not always seem commensurate with the task at hand. Knowledge-based training is easier to organize and therefore more frequently organized, while training in the hard and soft skills is more difficult to design. To be effective, such training needs to adopt a particular format and to be spread over an appropriate period of time. There would appear to be few experiences in this regard.

Reference material and bibliography available from the author.

Agenda Item 4.4 GF 02/7

SECOND FAO/WHO GLOBAL FORUM FOR FOOD SAFETY REGULATORS
Bangkok, Thailand, 12–14 October 2004

HOW OFFICIAL SERVICES FOSTER AND ENFORCE THE IMPLEMENTATION OF HACCP[1] BY INDUSTRY AND TRADE

(Prepared by Sirilak Suwanrangsi[2] and Suwimon Keerativiriyaporn [3], Thailand)

1. Introduction and Background on HACCP Implementation

HACCP is a systematic and preventive approach to achieve food safety standards. Originally developed in the United States to guarantee the safety of astronauts' food in space, HACCP is now being adopted worldwide as a scientific, systematic and effective approach to enhance food safety. Internationally, it is recognized that the application of the HACCP system to food production and preparation has clear benefits, including the potential of enhancing food safety and preventing many cases of food-borne diseases.

HACCP is becoming the international norm for food safety assurance. Regulatory food control authorities in many countries require HACCP implementation by food processing industries to ensure hygienic practices and safe products. This system has been adopted by many countries around the world and is mandatory in some countries. The requirements apply to various sectors in the food supply chain including domestic, exported and imported food products. The European Union and Japan require HACCP for specific products. In addition, many multinational food distribution chains now require a working HACCP programme as a prerequisite for becoming an accepted supplier.

Many Government agencies responsible for food safety control are shifting their agency's focus to prevention rather than inspection by encouraging the use of HACCP. Accordingly, HACCP based control programmes are increasingly adopted by food control agencies.

Government programmes to enhance the application of HACCP in small scale food processing establishments and in domestic and export markets have been the key to success of HACCP implementation by the food industry. In addition, in many countries, industry has taken the lead in developing in-house HACCP programmes and hiring and training personnel who are skilled in preventative quality control.

The HACCP approach can be used by all segments of the food production continuum and can be tailored to any individual product or process line. The advantage of using the HACCP system lies in the constant control it provides over food safety in the processing plant, from receiving raw materials to shipping the final products. HACCP is now applied to milk, fresh fruits, pasteurized juice and vegetables as well as meat, poultry and seafood.

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[1] Hazard Analysis and Critical Control Point

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In many cases, the move to introducing HACCP systems has been led by industry. The stimulus may have come from the firms themselves where, for enhancing food safety and/or quality or for market reasons, the decision was made to adopt HACCP. Food industries experienced in food safety management systems are more likely to appreciate the need to move to HACCP. Generally, they recognize the importance of HACCP in allowing them to gain access to domestic and foreign markets, to protect their reputation and to satisfy customer demand.

2. Government role in HACCP implementation

Governments in most countries play vital roles in promoting HACCP application through successful cooperation with all stakeholders in the food supply chain including industry associations, academia, individual processors and producers, suppliers of raw materials, exporters and importers.

Government agencies have both a strategic role in the implementation of HACCP, as well as an operative role in organizing the effective and ongoing assessment of HACCP systems of the food industry. A key role of government agencies is to demonstrate leadership by promoting and facilitating the implementation of HACCP. The type of activities that government agencies need to consider have been described in other FAO and WHO documents.[4,5] In summary, these could include the following:

2.1 Commitment

Government commitment is probably the single most important factor in the development and implementation of a successful HACCP initiative. In this respect, one of the most important tasks of governments is to raise the awareness of industry to the benefits of and need to introduce HACCP to produce safe food. To promote HACCP and secure the commitment of those involved, governments need to draw the attention of food enterprises to the following: the benefits achieved in rationalization of food safety management; risks inherent in certain foodstuffs or production processes; costs, including compensation costs resulting from production failure; and value of HACCP in safeguarding the enterprise's image from any associated outbreaks and/or product recalls.

2.2 Programme Requirements

To promote and facilitate HACCP initiatives, governments may need to consider implementing mandatory measures, as appropriate. Countries that have established mandatory HACCP schemes for specific products include: Australia, Canada, Japan, USA and the European Union. In some countries, control authorities have developed voluntary schemes and then sought participation by individual firms. For example, the Thai Department of Fisheries has used voluntary HACCP programmes to enhance the food safety practices, standards and the process for approval of fishery products for export. Whether the programme is mandatory or voluntary, clear guidelines should be provided for uniform application and scientific integrity.

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[4] WHO. *HACCP: Introducing the Hazard Analysis and Critical Control Point System.* WHO document WHO/FSF/FOS/97.2. Geneva, World Health Organization, 1997 (based on the Report of the WHO Consultation on *Hazard Analysis Critical Control Point System: Concept and Application*, with the participation of FAO, Geneva, 29-31 May 1995. WHO document WHO/FNU/FOS/95.7).

[5] FAO. *The use of hazard analysis critical control point (HACCP) principles in food control.* Report of an FAO Expert Technical Meeting, Vancouver, Canada, 12-16 December 1994. FAO Food and Nutrition Paper 58. Rome, Food and Agriculture Organization of the United Nations, 1995.

2.3 Training

Adequate training is important for overcoming barriers related to human resources in both government and industry. Governments need to take a leading role in training programmes. The support of academia and industry associations is vital. Training should include both industry employees and enforcement officials at different levels.

2.4 Technical Support

Industries, particularly those of small size, often lack the technical expertise required to implement HACCP and may therefore need external support. The capacity of governments and industry/trade associations and academia to provide adequate technical support is a critical factor in the successful implementation of HACCP. The type of technical support that could be offered by governments, academia or industry/trade associations may include:

- Providing relevant, technical training with consideration given to the level of education, culture and language of managers and staff;
- Facilitating the availability of appropriate, current, scientific support;
- Facilitating access to low cost analytical services;
- Providing accessible, sector-specific general guidance to businesses, such as industry guides, templates, and generic HACCP plans; and
- Establishing and maintaining food-borne disease surveillance programmes and facilitating access to collected epidemiological data.

2.5 Infrastructure and Facilities

Implementation of HACCP may require improvements in the infrastructure and facilities, both within the community and in the business itself. In this regard, governments have a role and, in some instances, even an obligation to ensure that the appropriate infrastructure (electricity, roads, safe water supply, sewage facilities, etc) is in place and that environmental pollution is minimized. The major role of the government is to ensure sufficient infrastructure and the compliance of facilities with food hygiene requirements.

2.6 Communications

Inadequate communications between the government and businesses and between businesses can impede the introduction of HACCP. Government agencies have a duty to clearly communicate all health and safety standards, regulations, guidelines, and other requirements to the food industry. Communication strategies need to be part of any HACCP initiative. To ensure a common understanding, it is important to use consistent and accurate terminology, such as that contained in Codex documents. The use of appropriate and effective channels for communication is also important for effective communication.

2.7 Evaluation

Once established, the HACCP programme should be evaluated to assess cost-effectiveness, compliance with legislation (if appropriate), adherence to schedule and how improvements could be made. Governments play a crucial role in HACCP evaluation by ensuring that the programme meets food safety objectives and by seeking its further development and improvement. Governments also have a role in enhancing the programme evaluation for the industry (internal audits) and in advising on how improvements can be made.

The impact of HACCP initiatives on the enhancement of food safety can be measured directly (e.g. through data collected from programmes for surveillance of food-borne diseases or monitoring contamination of food) or indirectly (e.g. through data collected in industries on the results of auditing or inspection of design and implementation of HACCP).

3. Fostering success of HACCP implementation

Governments have multiple roles to play in food safety control systems. These include promoting, assisting and checking that manufacturers have appropriate control measures for potential hazards and properly maintaining their implementation. In some cases, industry may take the lead in HACCP application, especially in large companies and export oriented food businesses.

It is of utmost importance that government authorities have the capabilities to perform the necessary tasks, especially when industry relies solely on the judgment of the regulatory authorities. Thus, governments have to re-organize the activities and work force to support the industry, particularly in the following areas:

Organization management: To strengthen the workforce capabilities, personnel management should be addressed first. This may include increasing the number of staff and upgrading their competencies to carry out the jobs assigned. Assessors who have been familiar with traditional GMP inspections and are not able to shift to HACCP based assessment may have to limit their tasks to those related to GMPs. Many agencies have coped with the problem through recruitment and training of new employees. When recruitment is not possible, management of personnel should be given critical attention.

Knowledge and skills: Food control agencies should ensure that assessors have sufficient knowledge of HACCP and of the relevant processing technology. The potential food safety hazards that are likely to occur must be controlled. Assessors should have sufficient knowledge and experience to identify hazards relevant to raw materials and processing technologies. Ability to determine appropriateness of the established control measures, which are directly linked to the HACCP requirements, is also vital.

Training is therefore important to provide knowledge and experience to assessors. However, attention should be paid to the context and delivery technique of the courses, particularly for those who are new learners. Training should not only focus on obtaining theoretical understanding, but also practical skills and auditing skills, for example, the ability to seek evidence and evaluate findings. Proper training helps to maintain consistent performance of the assessors.

Minimum training for assessors should include the following subjects:

- Principles and application of HACCP;
- Food safety hazards and control measures;
- Prerequisites to HACCP;
- HACCP assessment;
- Relevant processing technology;
- National/international HACCP requirements.

While training their own workforces to enforce HACCP implementation, government agencies have been providing support to the industry in order to successfully implement the programme. Such support includes the following:

3.1 Technical support

Governments play a leading role in the provision of the following:

Information package: In addition to laying down laws, requirements or rules, guidance materials or application manuals have been developed to describe regulatory requirements and the government's role in the recognition and auditing of HACCP systems. General information is also given on HACCP and documentation requirements.

Application manual: The manual explaining HACCP principles, its application to specific processes and products and the principal programme components required by control agencies (i.e. prerequisite control, hygiene control programme, generic HACCP model) is vital for successful application of HACCP by industry. The manual is an aid to the official inspection workforce and to management and employees in industry. The manual is intended for use during the implementation phases of HACCP.

***Industrial seminars*:** Communication to industry through meetings and seminars has become a useful tool for governments to explain HACCP requirements, initiatives, benefits, and programme objectives at the initial stages of the programme. Promotion materials (i.e. handbooks, leaflets, videos) are also helpful starters. Today, they are often replaced by web- based information, which is a readily- available source of information.

Hazard identification and control guides: A handbook describing hazards associated with specific raw materials, processes or products is necessary to provide science based information for hazard analysis and development of effective control measures. An example of such a document is the *USFDA Hazard and Control Guides for Fish and Fishery Products*, which provides a basic scientific foundation for industry application of HACCP. Specific hazard and control guides for raw materials and processes have been developed by many government agencies to meet particular needs in the countries.

Generic HACCP Models: Generic HACCP models have been developed by technical staff of governments to be used as a basis for HACCP plan development. These have been developed as guides for the design of specific HACCP systems for food establishments.

Scientific information: Since the HACCP system is designed for food safety, control measures selected should be based on scientific information. Some control measures have already been set by regulatory authorities. Where specific data on the results of control measures and other important information is not available, appropriate studies should be undertaken. The studies may involve risk assessment to identify hazards and appropriate control measures. In addition, methods for validation and the need for validation of critical limits established for CCPs are necessary. However, it is not always possible for processors to carry out these activities, particularly small processors who do not have adequate personnel, knowledge, and skills. Governments should take the lead to conduct studies and provide necessary information to industries.

3.2 Training Initiatives

Training programmes for industry/employees were initially a key role of government; however, this activity has since been taken over by academia, trade associations or private consultants. The aims of training initiated by governments are to enhance competency; enable uniform, science based application; ensure compliance; and to create confidence in one's ability, and thus confidence in the safety of the food supply.

Training in the initial stages of HACCP implementation is normally designed to provide processors with the kind of information necessary to develop and operate HACCP systems that would be in compliance with relevant regulations. During the implementation stage, on-going training should be conducted to strengthen weaknesses in certain areas, such as hazard analysis, internal auditing, validation, and how to maintain HACCP effectively.

Since the competence of the HACCP team is one of the driving forces affecting the success of HACCP implementation, the team members should receive adequate training to facilitate the implementation and maintenance of their company's HACCP system. In particular, the team leader may need advanced training. Training should not only focus on theoretical study, but also provide practical experience to facilitate a fuller understanding.

In some developed countries (i.e. Australia, Canada and the U.S.A.), training packages have been formulated for industry and regulatory officers by the government and by joint government/academia/industry teams, while developing countries have initially been assisted by international organizations in training their officials in the application of HACCP. Train-the-trainer courses funded by FAO and WHO have been the initial training efforts in many developing countries. Thailand has invested resources in training officials and industries to strengthen competencies in hazard analysis, programme application, programme assessment and audit and have worked with FAO and WHO in developing materials and training programmes for other countries in Asia.

Training programmes that conform to national standards, Codex requirements and importing country requirements have been developed and tailored to meet the needs of different sectors of industry, in particular small and less developed businesses (SLDBs). ***HACCP Curriculum Guidelines***, intended to assist providers who are considering the delivery of HACCP training courses, have been developed in various countries, through government initiatives and the support of academia and industry associations.

3.3 Hygiene improvements

As HACCP is not a stand alone system, it requires basic hygienic conditions and Good Manufacturing Practices (GMPs) to support the advancement of the programme. Prior to HACCP implementation, governments must provide the necessary assistance for hygiene improvements. Guidance for hygienic practices and GMPs for specific processes and products must be provided. The government must constantly review hygiene conditions with industry and develop a plan to encourage improvements and maintenance.

A programme to accelerate improvements of hygienic conditions and practices, such as good agriculture and aquaculture practices, a survey of hygienic conditions, training, on-site technical advice, and support of monitoring activities for primary and small scale processors has recently been initiated in Thailand.

3.4 Primary production controls

Even though HACCP is a tool for processors that is applied to manage food safety, some hazards existing in raw materials are environmental related problems, for instance, heavy metal contamination, pathogenic bacterial contamination and other types of pollution which are normally beyond the control of food processors alone. In this regard, a nationwide food safety programme should be conducted throughout the food chain. This includes control of the harvesting environment (whether in the wild or on farms), control of good handling practices prior to the processing establishments, etc. Government agencies should take the lead in these tasks.

3.5 Develop schemes that recognize HACCP systems

To accelerate effective HACCP implementation, development of schemes that recognize HACCP systems is necessary. This may include 1) the review of regulations and requirements to shift from end-point testing alone to a safety management system approach, and 2) applying reduced inspection rates where HACCP is effectively applied.

Regulatory audit: As the implementation of the HACCP system is making headway in food safety management systems of food industries, the traditional role of food control agencies, including that of food inspectors, is also changing, particularly in countries where the application of the HACCP system is mandatory. In addition to the inspection of food industries for compliance with GMPs and other regulatory requirements, government officials have to assume new responsibilities, including the assessment of industry designed and implemented HACCP systems.

Government authorities should define clear policy and procedures for audits to ensure uniformity and technical integrity. The role of government in HACCP audits is described internationally.[6] A curriculum for audit training, including audit manuals, has been developed for government use. Assessment tools have been designed for assessing and ensuring competency and consistency. Government assessment includes the following:

Programme evaluation: Pre-approval of the HAACP programme by governments leads to the improvement of HACCP application by industry, as it ensures that the programme meets legal requirements and food safety objectives. Control authorities usually require processing establishments to have HACCP plans, but some do not require processors to have them pre-approved; thus there is no way of knowing whether a processing plant's HACCP plan is in accordance with the agency's requirements until it inspects the plant. Pre-approval also validates that the programme is sufficient to ensure food safety and guides the processors in their application.

On-site compliance audit: The on-site audit should assess the adequacy of implementation, i.e. whether the HACCP plan and the prerequisites for HACCP have actually been implemented in the food business, are being maintained and are functioning correctly.

List of recognized establishments: Government authorities usually set HACCP requirements or compliance standards. Once these conditions are met, which are verified through audit, processors are included in the approved list. These lists are exchanged between authorities having jurisdiction for control of import and export, thus providing market access to companies that have systems meeting agreed standards.

Certification: Certification is one of the tools used to provide assurance that industries have an effective HACCP system in place to ensure food safety and regulatory compliance. Many governments are not fond of the use of certificates, but it is still a common practice used to ensure compliance. Governments can establish a HACCP certification scheme to assure that food processors comply with HACCP requirements. The main purpose of these schemes is to facilitate trade.

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[6] *Guidance on Regulatory Assessment of HACCP. Report of a Joint FAO/WHO Consultation on the Role of Government Agencies in Assessing HACCP.* WHO document WHO/FSF/FOS/98.5, pp 25-28. World Health Organization, Geneva, 1998.

3.6 Others:

Financial support: Governments may provide financial support to promote HACCP application through funding of hygiene improvements, infrastructure development, training and consultancy services.

4. Problems encountered in the application of HACCP

Although the HACCP system has been utilized for nearly 10 years, difficulties in HACCP implementation for both the industry and regulators are still obvious in many countries. One of the main reasons for this may be that the effective control of food safety hazards, such as through a HACCP system, require a scientific-based design and in- depth understanding of the management system. HACCP is not a one-dimensional management system, but requires a process of analytical thinking to ensure that proper control is established. Such a process needs to be reviewed either during the stages of HACCP development by processors or assessments by regulators. Some of the problems encountered in HACCP application are as follows:

4.1 Regulatory agency

4.1.1 *Government support*

Government commitment is a vital driving force of the success of a HACCP programme. A clear policy on food safety should be elaborated and turned into strategic plans for actual practices. In many instances, strong commitment from governments is still lacking, as reflected in the lack of real support at the operational level. Such support includes financial funding and manpower.

4.1.2 *Legal requirements*

In many countries, HACCP is widely applied only to exported products while domestic products are not dealt with, as there is no legal framework to enforce and assess HACCP systems in domestic products. Regulatory authorities face many time-consuming challenges in convincing processors to apply HACCP, especially small processors who already experience difficulties in complying with GMP requirements.

4.1.3 *Manpower*

A limited number of technical officers to provide technical assistance to the industry and regulatory assessors are available in some agencies, especially where the inspection system has shifted towards the HACCP approach. As it is more appropriate if there is a functional separation between government adviser and regulator roles, personnel needs increase. Also, HACCP based assessment is more time consuming than traditional GMP assessment as HACCP assessment demands proper planning for audit, document and record reviews, as well as observing current practices during the process. Traditional GMP inspections mainly involve only evaluation of cleanliness and hygiene against set standards, which simply observe conditions and performance.

4.1.4 *Assessor competency*

Knowledge of HACCP: Government officers need to have sound knowledge of HACCP in order to assist industry in designing and implementing the programme, and to be able to address questions that may arise. Regulatory assessment of HACCP requires a consistent performance. Hence competency of auditors is an important key to achieve this. The competent HACCP officers and auditors must understand the 7 HACCP principles and how to correctly (scientifically) apply them. The ability to identify potential hazards that may occur during processing and to assess the appropriateness of their specific controls is essential. Knowledge required also includes (but is not limited to) hazards associated with different raw materials and processing technology, for example canning and freezing have different hazards and hence different controls should be applied.

Inadequate HACCP assessment influences the safety of foods produced if potential hazards and controls are missed. On the other hand, processors may also become discouraged to maintain HACCP if unnecessary hazards are too difficult to control. For example, if histamine is mistakenly determined as requiring control in non-histamine forming fish, the processor may be required to record fish temperature, have a certification of analysis from the fish supplier, or test for histamine in every incoming lot. Some processors have a tendency to think that more controls in a HACCP plan will promote safer food. However, too many controls may instead create a burden for the processor, especially when a deviation occurs and corrective action is necessary. Although nothing is wrong with these HACCP plans, processors may be unable to maintain the overall HACCP system, since more time is spent on unnecessary controls rather than significant hazards that are likely to occur.

Assessment technique: Apart from the basic assessment procedures, the greatest challenge to an assessor is the ability to collect sufficient evidence to support the judgment of HACCP compliance. Different processors may have different control approaches to the same hazards and may also provide different information for assessment. Therefore, assessors must utilize appropriate techniques to obtain the needed information in each situation. Some employers are very cooperative with the assessors, while others are not. Too much restriction with the assessment guides or generic HACCP models provided without flexibility to the situation may result in non-compliance to HACCP plans. On the other hand, inability to seek the right evidence may cause processors to lose control of potential hazards and risk the production of unsafe food.

4.2 Food industry

4.2.1 *Technical difficulties*

Hazard analysis (HA): Since the introduction of the HACCP system, applying hazard analysis has always been a hurdle, even for larger companies. The process requires specific expertise and knowledge of chemical and microbiological hazards and their attached risks, which is often not available. For this reason, proper HA application is always an important focus in good quality training programmes.

Validation of critical limits: Critical limits are borderlines to define acceptability and unacceptability of the product. Unfortunately, not all borderlines are defined by figures that are easy for industry to use. In this case, validation is vital. If the critical limits set for controlling hazards are not properly validated (for example, temperature and time used for pasteurization or cooking of the product), the HACCP plan will not be able to ensure safe food. Such processes need to prove their sufficiency to reduce the targeted bacteria to an acceptable level. In some cases, scientific support for all critical limits selected is not available and the support, if any, is not relevant to the processing conditions present in the facility. Large factories usually have their own equipment and experienced personnel to establish the process or can hire external experts to perform the studies. Validation is especially a problem for small processors who have limited financial resources and qualified staff. Difficulties still arise, even if the test is done by an external institute, if the processor does not fully understand how to utilize the study results.

Inconsistent implementation of HACCP: The implementation stage of HACCP involves monitoring, corrective action, and verification activities. At times, it is found that the documented HACCP plans have not actually been put into place or monitoring is not conducted as established. Corrective action is not always taken when the critical limit is deviated. Problems particularly arise with HACCP plans that are too restrictive to control, as many deviations can occur and corrective actions may be taken during daily operations. In the worst case, if processors are not very happy with this situation as it could cause an increase in production costs, they may choose to not follow the impractical HACCP plans. This is often the case when an external consultant prepares HACCP documents for a company without any involvement from the company's staff. Any further changes made, for any reason, to the first developed HACCP plan are often difficult for the processor to implement.

Improper conducting of internal verification is also another weakness of HACCP application. Much confusion arises during monitoring, verification, and validation methodology as some processors cannot differentiate the activities concerned with these three procedures. The overall system verification is sometimes misleading and may be limited to only a conduct of sanitation and GMP checks, rather than observing the overall HACCP related activities and reviewing documents as well as records. Verification is an important tool to check if the HACCP system is functioning properly. A lack of such activity may subsequently lead to the inconsistent implementation of HACCP.

Another technical issue concerning industry is the utilization of data obtained from monitoring and HACCP associated activities. HACCP application generates many important records which will be useful in providing the trend analysis, which contributes significantly to improving the HACCP system. However, to be able to carry out analysis also requires knowledgeable personnel who understand the process of trend analysis and know how to evaluate and utilize the results obtained afterwards, which is often lacking in small-scale processors.

4.2.2 *Human resources*

Limited qualified personnel is one of the constraints for the success of HACCP. Large plants, where personnel management is well handled, can minimize the problem. However, small processing plants, where the turnover of key staff is often high, have more difficulties in developing and maintaining a HACCP system.

In order to maintain the effectiveness of HACCP, it is necessary for the company to have at least one person who has knowledge of and experience with HACCP. In many instances, the processing personnel give much more attention to provide adequate personnel to meet the daily production demands, whereas the technical personnel are often not considered to implement its HACCP system. This also includes personnel associated with HACCP activities, for example, CCP monitors. Lack of personnel or limited time available for performing monitoring as frequently as designed may result in inconsistent control of hazards.

4.2.3 *Financial capabilities*

Financial concerns are a restriction particularly for the small establishments, where the majority of food in many countries is produced. As food hygiene standards are prerequisites to HACCP, basic environmental processing conditions must be achieved. For some processors this may be a large amount of capital as they have made considerable efforts to upgrade their premises prior to implementing HACCP. Besides the upgrading costs, HACCP also creates additional costs of recruiting new employees, increased paperwork, consultant fees, training, etc. Due to such reasons, many establishments are delaying HACCP implementation if it is a voluntary programme and its products are still marketable.

Beyond HACCP:
How can the present food safety systems be improved at all points along the food chain?

Application of HACCP principles in various sectors of the food supply chain, from production of raw materials to processing, is necessary to ensure safe food, but more is necessary. It is recognized that HACCP is one of the risk management tools available to the food industry. HAACP alone cannot resolve food safety problems, which is why it must be complemented by other control measures such as traceability, labelling and laboratory analysis. The latter should be directed towards monitoring programmes for agriculture chemicals, pollutants, contaminants and natural toxins, rather than end product inspection.

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FOOD EXPORT CONTROL AND CERTIFICATION
(Paper prepared by Ms Shashi Sareen, Director, Export Inspection Council, India)

1. INTRODUCTION

The establishment of the WTO gives opportunities to all countries to benefit from greater access to world markets. The global trade is expanding rapidly and significantly due to increase in consumer demands linked to growing education and awareness of consumers, internationalization of tastes and habits, developments in science and technology, and improvement in communications and transportation. Coupled with the breaking down of tariff barriers and quantitative restrictions, quality and safety have become very important in international trade. Not only have consumers all over the world become conscious of quality, but at the same time governments have realized their role in protecting the health and safety of their populations by imposing stringent regulations based on health, safety and environmental considerations.

The TBT and the SPS Agreements, while permitting countries to impose standards to protect their populations and ensure fair trade, require that certain rules and disciplines are maintained so that standards and regulations do not create unnecessary barriers to trade. Both the Agreements also encourage member countries to recognize each other's conformity assessment systems based on international standards so that products certified in one country are accepted without need for further inspection/testing by the other through 'equivalence' or 'Mutual recognition' Agreements.

The need for a strong import control mechanism is quite obvious. The need for an equally strong export control mechanism is a natural corollary of such import control systems of importing countries, which have to have a provision for recognition of export certification systems of their trading partners through equivalence agreements.

In recognizing that quality and safety can be assured through application of proper or well designed food control systems (exports and imports), the Codex Alimentarius Commission established the Codex Committee on Food Import and Export Inspection and Certification Systems (CCFICS) to develop principles and guidelines in this area.

Although food control should cover both export and import as is evident from the terms of reference of this Committee and most of the documents it developed, most governments have emphasized on development and strengthening of import control systems with a view to protecting their populations and to prevent dumping of inferior quality products into their country. However, the situation in India and some other exporting countries has been somewhat different, with export inspection and certification being compulsory in certain food items.

In this paper, the importance of food export control and certification, broad concepts to be followed, the experiences in the area of export control including the systems being implemented in India, observations regarding export control systems being developed in other countries and lessons to be learnt or issues of focus are highlighted.

2. IMPORTANCE OF FOOD EXPORT CONTROL AND CERTIFICATION

The SPS Agreement permits member countries to impose measures to protect human, animal and plant life or health. Furthermore, the Agreement, through its provision for adherence/adoption of Codex standards, which in turn provide for legislative framework for imports and the role for official/government inspection/certification agencies and recognition of such agencies at the exporting country's end through equivalence agreements, permits members to establish formal systems of import control to ensure the appropriate degree of protection for their populace.

Taking strength from these Agreements, developed and developing countries have installed strong import control systems in the food sector. Many of these countries also maintain export inspection systems, but these are very minimal and basically cater for providing sanitary, phytosanitary or health certificates when desired by the importing country.

The need to have a well-developed food quality control system for export is more important for countries that are major exporters. Some of the benefits of such export control systems are highlighted below:

(i) Minimize impediments to trade by reducing the time for inspection and testing at the importing end.
(ii) Minimize and even eliminate rejection or non-compliance at the point of import.
(iii) Avoid duplication of inspection, sampling and tests at the exporting and importing ends and lead to usage of collective resources more efficiently and effectively.
(iv) Are financially more effective as cost of recall, cost of testing at importing end and cost of destruction of consignments is minimized.
(v) Take care of variation in quality due to production by small farmers, fishermen or enterprises.
(vi) Help in building up the image of the country, as ensures that inferior quality products are not exported by unscrupulous one-time or fly-by-night operators. Such problems can be minimized with mandatory export certification. For example, in the Indian dairy sector, export certification has become mandatory and it is obligatory for exports to take place only from material processed in an approved unit implementing food safety management systems.
(vii) Enable official inspection/health certificates to be given as the same are often required by the buyers.
(viii) Help in 'Capacity Building' in a country with respect to product as well as systems. With a mandatory export certification system, the country identifies the weaknesses and focuses on correcting these.
(ix) Decisions on a country's products that are exported are taken by the country itself rather than by the importing country. For example, if the product does not meet an importing country's requirement, the exporter can, in consultation with the official certifying body send it to a third country, which permits the same, rather than the importing country deciding that it is not fit for consumption as its requirements are not met and therefore needs to be destroyed.
(x) Facilitate negotiating Agreements/MoUs for recognition of food control systems and certification by the importing country.
(xi) Provide protection to the consumer of the importing country as the broad objective of the exporting country is to ensure that requirements of the importing country are met.
(xii) Facilitate implementation of various forms of voluntary certification which address the entire chain from farm to table. This is simplified as a major part of the total chain,

namely processing is already covered and only additional areas such as those at farm level need to be certified.

3. BROAD COMPONENTS OF EXPORT CONTROL SYSTEMS

3.1 Export Food Control Policy and Strategy

Export food control activity is a multi-disciplinary activity covering a number of aspects such as food science, microbiology, analytical chemistry, plant pathology, veterinary science, etc. A number of agencies would normally be involved in any country including various departments of government, control organizations, promotional bodies, research institutions, agricultural institutions, farming community, trade associations, non-governmental organizations (NGOs), consumers etc. There needs to be a suitable documented export control food strategy with clear objectives, including the countries of focus, well designed plan of action with role clarity provided for different players and clear networking of the organizations within the country.

3.2 Legislative framework

Food legislation includes acts, regulations, and requirements or procedures prescribed by the government relating to export of foodstuffs to meet requirements of the importing country while ensuring conditions of fair trade. Food control needs to be simple, complete, covering various aspects of the food chain as needed and address requirements of importing country - both issues of safety and quality. It should provide authority to carry out controls at all stages of the food chain. Furthermore, it should be flexible to allow taking into account new technologies, developments and changing trade needs. It also needs to be WTO compatible and as far as possible based on Codex standards, guidelines and recommendations, but depending on importing country's requirements. Legislation may also include provisions for registration of establishments or listing of certified processing plants, establishment approval, licensing or registration of traders or agents, equipment design approval, penalties, coding requirements and charging of fees. Necessary provisions need to be included for ensuring integrity, impartiality and independence of the official and officially recognized inspection and certification systems.

3.3 Control programmes and operations

Inspection services should design control programmes based on precise objective and appropriate risk analysis. HACCP or a similar quality and safety assurance and management system based approach should be encouraged with responsibility for meeting the food quality and safety regulatory requirements of importing country resting with the food industry with all segments of the food chain having responsibility for establishing food safety and quality controls. The responsibility of food control regulators is to ensure, through a surveillance system of industry and other components of the food chain that they meet the requirements specified by the importing country.

Elements of a control programme should include the following:

- Inspection;
- Sampling and analysis;
- Checks on hygiene, including personal cleanliness and clothing;
- Examination of routine and other records;
- Examination of the results of any verification systems operated by the establishment;

- Audit of establishments by the national competent authority responsible for export control;
- National audit and verification of the control programme.

An administrative procedure should ensure that controls by the inspection systems are carried out regularly proportionate to the degree of risk, where non-compliance is suspected and in a coordinated manner between different authorities (if several exist).

Control should also cover, as appropriate, the establishment, installations, means of transport, equipment and material; raw materials and ingredients for preparation and production of food stuffs; semi-finished and finished products; cleaning and maintenance products; processes for manufacture or processing of foodstuffs; preservation methods; labelling integrity and claims etc. Formal documentation of the export control programmes is also necessary.

3.4 Decision criteria and action

Control programmes should target the appropriate stages of operation depending on specific objectives. The frequency and intensity of controls should be designed to take into account the risk as well as the reliability of controls already carried out by those handling the products at various other stages i.e. production, manufacturing, etc. In case of rejected products, information should be sought by the export food control authority from the importing country as per CAC/GL 25-1997 – Codex Guidelines for the Exchange of information between countries on rejections of imported foods. Such information on rejections should be provided at the earliest opportunity, by the export control authority, to the exporter, the manufacturer, producer and any related department depending on the situation.

3.5 Facilities, equipment, transportation and communication

Adequate facilities including equipment, transportation and communication facilities should be available to ensure delivery of export inspection and certification services.

3.6 Laboratories

Laboratories are the backbone of the inspection and certification activity. In order to test to requirements prescribed by the importing countries, the laboratories should have state-of-the-art equipment and manpower that is qualified and trained to operate such equipment. The laboratories used by the export inspection and certification services need to be accredited as per international standard ISO 17025 under officially recognized programmes to ensure that adequate quality controls are in place to provide for reliability of test results. Internationally accepted quality assurance techniques should be implemented to ensure reliability of analytical results.

3.7 Personnel

Official inspection and certification services should have access to a sufficient number of qualified personnel in food science, technology, chemistry, biochemistry, microbiology etc. The personnel should be trained in areas of inspection and certification systems, audit techniques, risk analysis techniques, testing, technological aspects etc. and have a status that ensures impartiality and no direct commercial interest in the products or establishments being inspected or certified.

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3.8 Certification systems

Certification should provide assurance of conformity of a product to importing country requirements by checks on each product or a batch of products or by approval of the system being implemented by the processor with regular checks by the inspection and certification service on various aspects of the system being implemented. The competent authorities should take all necessary steps to ensure the integrity, impartiality and independence of official or officially recognized certification systems.

3.9 Official accreditation

Export inspection or certification bodies may be officially accredited to provide services on behalf of official agencies. These bodies shall comply with criteria laid down in international standards such as ISO/IEC 17020, ISO Guides 62 and 65, as well as Codex Guidelines for the Design, Operation, Assessment and Accreditation of Food Import and Export Inspection and Certification Systems with specific reference to competence, independence and impartiality of personnel. The performance of such inspection and certification bodies should be regularly assessed by the competent authority.

3.10 Assessment and verification of inspection and certification systems

The export inspection and certification system should be subject to audit separate from routine inspection, may be self-evaluation or by third parties. Internationally recognized assessment and verification procedures should be used. Guidelines for conducting assessment and verification of an exporting country by an importing country have been given in the Annex to CAC/GL 26-1997 and an importing country may undertake a review of the exporting country's systems, if so agreed.

3.11 Transparency

For decisions relating to food export control systems, both developmental as well as implemental, there is a need to have information as well as data that is scientifically collected, shared with decision makers and implementers as well as processors. This would include information on regulatory requirements of importing countries; data on residues and other parameters which would help in framing regulatory requirements as well as being used for decision making on implementation actions to prevent food-borne hazards, plan food control activities etc. While ensuring transparency, any constraint of professional and commercial confidentiality should be respected.

4. EXPERIENCES IN THE AREA OF EXPORT CONTROL AND ISSUES ARISING OUT OF THESE

4.1 Export Control Systems in India

India has been operating export control systems since 1963 which have been well-defined and established under the Export (Quality Control and Inspection) Act, 1963. The Act empowers the Central Government to notify commodities for pre-shipment inspection and certification, specify the minimum standards (generally recognizing international, importing countries' standards and contractual specifications), and prescribe the manner of export inspection and certification, whether compulsory or voluntary.

The export control system is operated by the Export Inspection Council of India (EIC), India's official export certification body, through its field organizations, the Export Inspection Agencies, having head offices in Chennai, Delhi, Kochi, Kolkata and Mumbai with 41 sub-offices including laboratories around the country.

Over the years, under the provision of the Act, nearly 1000 commodities have been notified by the government for pre-shipment inspection and certification covering such sectors as chemicals, pesticides, rubber products, engineering products, food and agricultural products, textiles, footwear etc. However, presently only sensitive items such as marine products, egg products, dairy products, poultry products and honey are under compulsory export certification by the Export Inspection Council of India. In the case of other food products, although many of these are notified under the Act, there is no compulsory certification and in many cases, and in case required by an importing government, EIC certifies the products. An example is the case of black pepper exported to USA, or basmati rice to the EC for duty benefits, etc. However, if required by the buyer or government, these food items may be certified by private inspection agencies. Details of export control systems being operated by the Export Inspection Council of India are given in the Conference Room Document prepared by India.

4.2 Experiences in the Area of Export Controls

Implementation of export control systems strengthens a country's infrastructure of food control and, streamlines trade between countries. During the course of operation of export control systems, India has encountered varying experiences, some of which are highlighted so that these may be taken note of and consciously addressed for capacity building in the country as well as addressing problems and removing hurdles.

(i) Equivalence Agreement/ MOUs

The concept of equivalence has been recognized in both the SPS and the TBT Agreements and is also being encouraged at the international level by the Codex Alimentarius Commission with a view to using pooled resources more effectively, avoiding duplication of inspection and testing, and ensuring that health and safety requirements are met effectively. These also serve as an important means of facilitating trade by recognition of the standards and certification systems of the exporting country to provide for an equivalent level of protection against health risks as those of the importing countries and also lead to reduced rejection rates and provide for reduced inspection of export products in overseas markets. Such Agreements are possible only if there is a strong export control system being maintained by the exporting country.

India has been seeking recognition of its export certification from the importing regulatory authorities of India's trading partners through MOUs/Mutual Recognition Agreements (MRAs). The EIC has been recognized by the European Commission, USFDA, AQIS (Australia) and Sri Lanka Standards Institution for various products.

With countries where Agreements have been signed or where the export certification system has been recognized, there is a smooth trade flow and any issues identified are sorted out through mutual discussions. However importing countries often avoid such Agreements, with varying arguments such as - this is not a priority for them, import controls are a means of income and by signing such Agreements they would lose financially, or the administrative burden of entering into these is not justified or they do not want to lose control over imports. At times it is seen that important components are not addressed in such Agreements as these are not in the interest of the importing country such as provision for retesting and appeal in case of rejections. Other countries have appointed private inspection agencies to carry out this task rather than recognizing the official certifying body. It may be mentioned that such an Agreement would benefit exporters in a 'developing' country as the financial burden as well as risk of rejection would be reduced.

(ii) Information on Requirements of Importing Country

Export certification has to cater to the level of protection specified by the importing country. Many countries specify levels more stringent than international ones. There are two issues here – a) certifying to different standards and b) need to have information on the SPS requirements of various importing countries in terms of their standard and legislation. The former cannot be questioned as the SPS Agreement permits members to fix their ALOP. However, scientific justification is not always forthcoming. With regard to the latter, there is often absence of information on the regulations and the procedural norms, such as methods of sampling, inspection and testing. New regulations are brought out and implemented without even giving the producers in the exporting country a chance to become familiar with these. Often standards are available only in the language of the importing country or are presented in a very complicated manner. The result is that neither the exporters nor the export certification authorities are clear about the specific requirements that they need to meet or certify against. This has, at times, led to rejection at the point of import.

(iii) Imposition of Infrastructure Requirements

In building up export certification systems, in addition to end product criteria, a food safety assurance and management systems approach to include GMP/GHP/GAP/HACCP is increasingly being implemented in the food sector especially for more risk prone products such as marine, meat, poultry, egg and dairy products, etc. Under this approach, the focus is on assessment of hazards and establishing control systems which address preventive measures instead of relying primarily on end product testing for certifying health and safety aspects.

Although under this system, flexibility of implementation has been provided for, some countries are insisting on installation of specific infrastructural requirements such as milking machines for milk production, a large number of change rooms, flake ice machines, etc. by the exporters. The exporting country is thereby forced to cover the needs of each importing country. This has resulted in the whole concept of equivalence getting lost. Implementation of such systems at the primary production level becomes difficult in a country such as India, which has a large number of small farms with their own inherent systems.

(iv) Traceability/Product Tracing

Traceability/Product tracing is an important concept. Codex has adopted a definition of Traceability/Product tracing and is working on this in its various committees. In a large country like India, where farms are of small size and raw materials are procured by processing units or exporters through traders, the concept of Traceability/Product tracing to the farm is sometimes not possible. Export certification therefore takes into account the concept of equivalence and alternatively requires a strong raw material control system at the point of entry into the factory. Such concepts addressing the area of equivalence are sometimes not accepted by importing countries and these need to be specifically addressed in documents being developed by Codex on principles for the application of Traceability/Product tracing.

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(v) Rejection and Destruction of Consignments

One would expect that with an export certification system based on international established guidelines, rejections should not take place at all, or even if they do, these should be absolutely minimal based on chance factors. However, it has been observed that rejections normally continue. An assessment of these rejections shows that on a number of occasions, the importing country is adopting different methods for sampling and testing and also testing for parameters/contaminants, which are not notified; which can become reasons for rejections.

Another increasingly important issue is that of destruction of consignments. Certain health authorities have recently started destroying contaminated consignments (either because of biological or chemical contamination) instead of returning them to the exporting countries as requested by the exporters/importers or even the Official Certification Body on the grounds that if the contaminant is harmful to one country it would be harmful to another. With the implementation of official export certification, return of consignments to the exporting country needs to be formally accepted, if desired by the exporting country so that it can, under its responsibility, take a decision on the fate of the consignment. It is important that, the competent authority of the exporting country has an opportunity to retest the consignments and ascertain whether it is contaminated and if so, analyze the cause before any decision is taken on destruction of the consignment. There have been instances of consignments having tested positive in one laboratory of the importing country and negative in another laboratory, or negative in the laboratory of the exporting country. Therefore, unless there is uniformity in methods of testing being followed, such rejections and destructions would not be justified. Further, in cases, where contamination can be taken care of through reprocessing as in the case of *Salmonella* contamination, the exporting country may decide to proceed with the same.

(vi) Non-recognition of Health Certificates of Export Certification Body

An issue that has recently been faced is non-recognition of 'health certificate' of the official export certifying body by the import control authorities in the importing countries. An example can be cited where an importing country insisted on a health certificate for egg powder by the Ministry of Agriculture in India and would not accept the health certificate of the official certifying body, namely Export Inspection Council of India, as the same was under Ministry of Commerce. As mentioned, the export quality was under control of EIC so the option was to either get an endorsement on the certificate by Ministry of Agriculture in India, which in effect would have no meaning or convince the importing country of the situation in the country. The latter course was the more logical one and is currently under discussion.

(vii) Accreditation of certification bodies as per international standards

World over, the requirement today is that certification bodies implement international criteria such as 'Codex Guidelines on Design, Operation, Assessment and Accreditation of Food Import and Export Inspection and Certification Systems' (GL 26-1999), ISO/IEC Guide 65 for product certification, ISO/IEC Guide 62 for system certification etc. It is further necessary that these certification bodies are accredited against these standards. Implementation of such systems helps in building transparency in inspection and certification activities, bringing about clarity in the procedures being followed and overall strengthening the inspection and certification activities. The need to implement such formal systems has recently been felt with the initiation of agreements for recognition of the export certification. As a result, India has recently started working towards implementing such systems by its official export certification body and aims to further seek accreditation against international standards.

(viii) Strengthening laboratories

Export control and certification have to be supported by test facilities meeting the requirements of the importing country. By carrying out export certification against the requirements of countries such as the EC, India has been able to build up its test capabilities to test against the most stringent requirements. For example, while certifying marine products, egg products etc for the EC markets, veterinary drug residues had to be tested at less than 1 ppb levels, for which testing had to be done with HPLC MS MS. The equipment was procured and around 11 laboratories were strengthened in the first instance. All the laboratories being used, specifically for export testing, are now gearing up for accreditation against ISO 17025. Export certification has thereby led to strengthening test facilities and bringing them at par with those in the most developed countries.

(ix) Identifying areas that need to be addressed

A well-defined export certification activity has helped in identifying areas to be addressed to strengthen the food control activities in the country. For example, an assessment of the export control system by the European Commission for residues showed that although veterinary drug residues were being controlled in the processing units, control at the farm level was not very effective. The reason was that the Official Certification Body, under the Ministry of Commerce, did not have the legislative authority to implement controls at farm level. The Ministry of Agriculture, has authority over farms and the Ministry of Health over drug stores. It was necessary to develop coordination between the three ministries for effective control over the final end product. New legislation to cover all areas was developed and the flow of information between the Ministries of Health and Agriculture and EIC was strengthened. This has now led to effective controls on the use of veterinary drugs at farm level and also controls on veterinary drug stores leading to fewer rejections.

(x) Strengthening sectors of industry

Compulsory export certification has been gradually introduced in marine, dairy, egg products, poultry products, etc. In all these sectors, a systematic approach is mandatory. Before introduction of compulsory certification for exports, most processing units had not been implementing GMP/GHP/ HACCP. However, due to the mandatory need for such systems, they started implementing the systems and the benefits became obvious to management in terms of workers following better hygienic practices, strengthened raw material controls, effective record keeping, training of manpower etc which led to overall improvement of quality and supporting systems. Today, the areas in which compulsory export certification has been introduced, has processing units that can match the best in the world.

(xi) Data Availability

Export certification has led to streamlining activities and systematic testing of products and raw material in production units as well as by the export certification body. Further, residue monitoring plans have been developed and implemented, which has resulted in considerable data generation. With such supporting data, it has become possible to take up issues at international fora as well as with importing countries on issues of rejections, SPS limits fixed by them etc.

(xii) Empowering Personnel

As a result of export certification, the weaknesses in the capabilities of personnel both in conformity assessment activities (inspection, certification and testing) as well as in processing units and at farm level have been observed and based on this, training needs identified with focus on developing and upgrading skills of not only officials with regard to certification and testing, but also empowering industry to implement quality and safety as per international requirements. A Human Resource and Quality Development Centre was established in EIC to intensify training activities. A pool of eighty trainers was initially created through an FAO project on 'Manpower Development in Food Safety and Quality' which was further utilized for training. This has resulted in not only empowering personnel within the country for inspection and testing, but has generally helped in creating awareness and knowledge on health and safety issues even within the industry.

5. SOME OBSERVATIONS ON EXPORT CONTROL SYSTEMS BEING IMPLEMENTED IN OTHER DEVELOPING COUNTRIES

Although guidelines have been established for the design, operation, assessment and accreditation of food import and export inspection and certification systems, many countries are not effectively using the guidelines. Some observations on the export control systems implemented in different countries are given below.

i) Too many acts/regulations in the area of export control. There is a need to bring out a single legislation with a different and clear role for various bodies.

ii) A generally complicated system for exports with involvement of too many agencies and too much overlap leading to wastage of national resources. This has also led to a lack of clarity in procedures to be followed as well as the role of different organizations.

iii) Lack of coordination between different departments operating in the same area. Each body carries out its own inspection and testing and takes its own samples separately and as a result, many consignments are opened leading to a waste of time, effort and resources. No confidence in each others' inspection or testing results.

iv) Generally no documented inspection and testing procedures have been laid down. Even if these have been laid down by some organizations, they are not available at the place of implementation so inspection and test personnel are not aware of them.

v) In general, a consignment wise inspection approach is followed rather than a systems approach. The results depend on the representative nature of the sampling and therefore are not always reliable. In certain areas, such as live animal inspection at ports and olive oil, all consignments are inspected prior to export, which means use of too much manpower.

vi) There is generally a lack of information on the requirements of individual importing countries, so certification is being done as per national or Codex standards, and in case these differ in the importing countries, it may lead to rejections.

vii) In the laboratories for export testing some of the weaknesses observed are as follows:
    - ➢ Standards as well as testing methods not available;
    - ➢ No equipment control/calibration, servicing of equipment not carried out as a result many pieces of equipment are out of order;
    - ➢ Standard reference material often not available;
    - ➢ Coding of samples not effective as the brand name remains on the container;
    - ➢ Procedures not systematized – samples given for testing without any request for analysis, as a result testing was being done as per memory;
    - ➢ Lack of sensitive equipment for antibiotic residue detection at 0.1 ppb levels, which is a requirement of EC countries,
    - ➢ GLPs as per ISO/IEC 17025 not yet introduced.

viii) Customs do not have updated information on requirements for export. The concerned department has to keep pushing with them regarding their requirements. Systems are not streamlined or transparent.

ix) There is a lack of confidence in inspection and certification done by the exporting country even if there is an agreement with them for recognition of certification. This has been expressed by inspection officials, and as there is no accepted documented system, such interpretation by inspecting officials would continue.

x) Promotional bodies are often also doing certification which should not be the case as the same would be a conflict of interest with their main activity of technical assistance to build up industry as well as marketing of products in overseas markets.

xi) There is no system of accreditation of laboratories, inspection or certification bodies in some countries. Certain laboratories are preparing for accreditation but in case of inspection and product certification activity there does not seem to be much progress. Some countries do not even have accreditation bodies for inspection and certification activities.

6. LESSONS TO BE LEARNT/IMPORTANT ISSUES OF FOCUS

6.1 For export, a clear policy needs to be developed taking into account issues like - are all exports to be controlled or specific products, type of parameters (health and safety or quality also), the need to build in any voluntary requirements along with mandatory ones, who would be the authority, what are the systems of inspection and certification to be followed, is the country looking at signing MRAs or equivalence Agreements for recognition of its export certification or is the aim only to ensure that a safe and good quality product is exported.

6.2 *Transparency* - All specifications, inspection and testing methods and procedures need to be documented. In fact, the entire inspection and certification system for exports needs to be documented. The operative part of the legislation needs to be clearly laid down in the form of regulations or executive instructions, and given to each inspecting official so that they are available at the point of use. All specifications, inspection and testing methods should also be accessible to interested parties overseas to enable *'transparency' in line with Article 7 of the SPS Agreement.*

6.3 Self-certification by industry needs to be encouraged. Exporting units should be approved based on their following a total quality management approach i.e. implementing GMP/GHP/HACCP as well as conformance to the requirement of international specifications and those of the importing country. Periodic surveillance of the unit should be done wherein the aspects that need to be specifically checked include sanitation and hygiene of the plant, process control, implementation of HACCP plan, records, observation of testing in the laboratory of the plant, drawing of samples from various stages in the plant for testing. The certification should also take into account the varying requirements of importing countries so that rejections at importing end are reduced. This is one of the issues which have been expressed as being of concern to the exporters.

6.4 Legislation needs to be simplified to have a single legislation for food quality control preferably to include both export and import. This should contain clear defined roles of various authorities with a view to avoiding overlap.

6.5 Inspection systems followed by different inspection and certification agencies need to be aligned with ISO 17020/Guide 65 and the Codex Guidelines for the Design, Operation, Assessment and Accreditation of Food Import and Export Inspection and Certification Systems.

6.6 *Equivalence agreements* - The importing governments should enter into equivalence agreements with governments of other countries for recognition of each other's food export inspection and certification systems *in line with Article 4 of the SPS Agreement.* Such Agreements would provide an enhanced means of assuring that exported foods conform to importing country's requirements, avoid duplication of activities and use collective resources more effectively and efficiently, provide a mechanism for cooperative exchange of expertise, assistance and information to help assure and enhance conformity with requirements. Such Agreements should include in addition provisions for transparency of legislation relating to specifications, sampling, inspection and testing methods etc; retesting and appeal in case of rejections; return of rejected consignments; technical assistance etc. Such Agreements would facilitate exports and reduce inspections and rejections of products in overseas markets.

6.7 *Accreditation* – A system of accreditation needs to be developed in all countries for both inspection bodies (ISO 17020) and certification bodies (ISO Guides 62 and 65) as well as laboratories (ISO 17025) and all organizations performing such activities would need to become accredited. This would result in much-needed credibility to inspection and certification activities.

6.8 *Training* - Personnel need to be trained within the country as well as overseas on a regular and systematic basis to bring about awareness on the scenario for inspection and testing in the country as well as the latest testing techniques, methods of sampling, risk analysis, HACCP, document and record control, auditing techniques, etc.

6.9 *Computerization* – All organizations need to be networked so that information can be coordinated and accessed by all organizations. Websites need to be developed to contain information on standards as well as export inspection and certification systems and procedures to enable transparency for internal and outside personnel.

6.10 *Promotion and market development* – These activities need to be strengthened to create a market for the country's products. Export promotion needs to be given priority and some schemes developed to assist exporters. These could be in terms of financial/technical assistance to exporting units to set up in-house laboratories with basic test facilities, for implementing ISO 9000/14000 or HACCP. A logo may be developed and brand promotion campaigns launched in various countries. Participation in trade fairs may be intensified.

6.11 *Guidelines for Exporters/ Importers* - A guideline document for exporters needs to be developed which gives an overview of the system of exports and imports as well as broadly the role of different organizations as also clearly laid down steps which an exporter would need to follow for exports.

6.12 *Capacity Building* - Clear areas need identifying for '*Capacity Building*' of domestic, import and export inspection and certification systems to meet international requirements to include:

- Laboratory strengthening in terms of equipment and training;
- Implementation of ISO/IEC 17020 for inspection activity, ISO/IEC Guides 62 and 65 for certification and ISO/IEC 17025 for testing;
- Human resource empowerment especially inspectors in area of inspection and audits;
- Using a systems approach in export certification.

Advantage needs to be taken of *Article 9* of the SPS Agreement and technical assistance sought on these areas from importing developed partners.

6.13 In case of rejections, an export control body should enter into dialogue with importing authorities to resolve problems that may arise due to rejection of a consignment in the importing country. Issues due to rejections have been differing standards/conformity assessment procedures, lack of transparency etc. This would be facilitated as due to export certification, the entire data and background is available with the export certification body.

7. CONCLUSION

Although the significance of export certification systems have not been fully recognized by many countries, these can play a very important role in the present day scenario of rapidly expanding global trade in food. These would be useful for both importing and exporting countries and would help to utilize pooled resources more effectively while ensuring that the food exported is safe and meets the sanitary requirements of the importing country as well as any voluntary requirements, which can also be built into the system. However care needs to be taken that such export control systems are established based on the Codex Guidelines for the Design, Operation, Assessment and Accreditation of Food Import and Export Inspection and Certification Systems.

Agenda Item 4.5 GF 02/8b

SECOND FAO/WHO GLOBAL FORUM OF FOOD SAFETY REGULATORS

Bangkok, Thailand, 12-14 October 2004

FOOD IMPORT/EXPORT CONTROL AND CERTIFICATION IMPORT SYSTEMS OF THE UNITED STATES OF AMERICA

(Prepared by the United States of America)

Introduction

With the proliferation of movement of people, food and agricultural products between countries, food produced in one country increasingly ends up on the dinner table in another. This process is accelerating and expanding, evidenced and hastened by the multitude of cooperative relationships being pursued and established among countries.

Within the United States of America (U.S.A.), two federal agencies have the primary responsibility for assuring the safety of imported foods. The Food Safety and Inspection Service (FSIS) of the U.S. Department of Agriculture (USDA) enforces laws and regulations relating to meat, poultry, and egg products. The U.S. Food and Drug Administration within the Department of Health and Human Services (HHS/FDA) enforces the Federal Food, Drug, and Cosmetic (FD&C) Act and other laws which provide jurisdiction over all other foods. Both agencies are charged with protecting the health of consumers and assuring truthful labelling for the foods under their authority.

All food products imported into the U.S.A. are required to meet the same standards as domestic goods. To enter the U.S.A., imported foods must be pure, wholesome, safe to eat, produced under sanitary conditions, and must meet all U.S. standards including having informative and truthful labelling in English.

Due to differences in the attributes of products falling under their respective jurisdictions, the differences in the historical development of the agencies and in their underlying legal authorities, USDA/FSIS and HHS/FDA take different approaches to the regulation of food, including imported food products.

Food Safety and Inspection Service

Countries that export meat, poultry and egg products to the U.S.A. must have an inspection system equivalent to the U.S. system. Foreign countries undergo a comprehensive review process before they may be considered eligible to export to the U.S.A. To ensure equivalency, FSIS works collaboratively with the inspection service of the exporting government. While the meat, poultry and egg product regulatory systems of other countries need not be identical to the FSIS system, they must employ equivalent measures considered to provide the same level of protection against food safety hazards. FSIS makes two types of equivalence determinations: (1) determinations of initial equivalence (termed "eligibility") for countries that are not yet trading partners, and (2) determinations of whether equivalence is being maintained by countries already eligible.

The evaluation of a country's inspection system to determine initial eligibility entails a document review and an on-site audit. Through the document review, an evaluation is conducted of the country's laws, regulations and other written information detailing its controls in five risk areas: sanitation, animal disease, slaughter and processing, residue and enforcement. If the document review process yields an affirmative equivalency determination, a technical team will visit the country to make an on-site evaluation of the five risk areas, in addition to other aspects of the inspection system. This initial equivalency audit includes plant facilities and equipment, laboratories, training programmes and in-plant inspection operations. Such on-site audits are intended to verify that countries have implemented inspection programmes properly and, if not, to resolve differences and clarify requirements.

Once equivalence has been established, the foreign country is eligible to ship products to the U.S.A. It is important to note that FSIS does not conduct food inspections in other countries, nor does it certify individual foreign establishments for export to the U.S.A. After it is determined that a country has an equivalent food regulatory system, FSIS will rely on that system to carry out daily inspection and to certify individual exporting establishments.

To verify on-going equivalence, FSIS regularly conducts on-site audits of the eligible foreign inspection systems and re-inspection of products upon arrival in U.S. ports. The term re-inspection is used because, due to the FSIS equivalence requirement, all entering products have been inspected and approved by the exporting country's equivalent inspection system.

As a general matter, all products enter the country under the authority of U.S. Customs and Border Protection (CBP), Department of Homeland Security. Importers of any merchandise into the U.S.A. must file an entry form with CBP within five working days following the arrival of the shipment at a U.S. port-of-entry. For meat and poultry shipments, FSIS requires two additional documents--the original certificate from the country of origin indicating that the product was inspected and passed by the country's inspection service and is eligible for export to the U.S.A., along with an import inspection application and report. The CBP also requires the importer to post a bond, usually of an amount to cover the value of the shipment plus duties and fees. As a result, meat and poultry shipments remain under bond and subject to recall by the CBP until FSIS re-inspection occurs and the product is cleared for release.

Once the necessary documentation is provided, every shipment is given a visual inspection for appearance and condition and is checked for certification and label compliance. In addition, a centralized system linking all inspection activities, the Automated Import Information System (AIIS), assigns to import inspectors other types of inspection. These include product examinations and laboratory analyses for microbiological contamination and chemical residues. These testing programmes are modelled after the microbial residue testing plans for domestic products in the U.S.A.

If the shipment fails the re-inspection, it is refused entry by FSIS; and the frequency of inspection is increased for shipments of similar product from the same foreign establishment until a record of compliance is re-established.

When a shipment is refused entry to the U.S.A., the importer has several options. The shipment can be re-exported from the country, destroyed, or, in some cases, converted to animal food. In addition, importers are permitted to re-label products to bring them into compliance with U.S. requirements.

Food and Drug Administration

HHS/FDA regulates all foods (e.g. seafood, fruits and vegetables, dairy products) except meat, poultry, and certain egg products. To ensure that HHS/FDA is notified of all regulated products imported into the U.S.A., the importer, or his/her representative, must file an entry notice and an entry bond with the CBP, pending a decision regarding the admissibility of the product. HHS/FDA inspection and enforcement procedures for imports are closely coordinated with CBP.

HHS/FDA receives notification of all HHS/FDA-regulated entries through CBP. If HHS/FDA does not wish to examine the entry, the product is allowed to proceed into U.S. commerce. Any time a sample of an article offered for import has been requested by the HHS/FDA for testing, the owner or consignee shall hold the shipment and not distribute it until further notice is received regarding the results of the examination of the sample.

Generally, if HHS/FDA decides to examine an entry, an HHS/FDA investigator or inspector will collect a sample from the shipment for laboratory evaluation. If the analysis indicates the product is in compliance, the shipment may be released into U.S. commerce.

If, after HHS/FDA examination, it appears that the product is in violation, HHS/FDA issues a Notice of Detention and Hearing to the owner or consignee of the article, specifying a place and period of time whereby the individual may introduce testimony either verbally or in writing. Depending upon the nature of the apparent violation of the FD&C Act, the importer may be provided an opportunity to submit a petition to recondition the product to bring it into compliance. The owner or consignee may submit an application to HHS/FDA to re-label or perform other actions to bring the article into compliance or render the article into something that is not a food, drug, device, or cosmetic. An application for authorization to re-label or perform other actions to bring the article into compliance shall contain a detailed proposal, specifying the time and place where such operations will be carried out and the approximate time for completion as specified by regulation. All petitions to recondition a product are subject to HHS/FDA review and approval.

The FD&C Act, Section 801(a) provides for refusal of admission of any article that appears to be in violation of the Act. If the product is not brought into compliance and is refused admission, the importer is required to either re-export or destroy the article under CBP or other approved supervision within 90 days of the date of the issuance of the refusal. If the refused product is not destroyed or re-exported as required, CBP issues a notice for redelivery to the importer of record. Failure to redeliver the refused product may result in CBP assessing liquidated damages against the importer's bond.

In some instances a Notice of Detention and Hearing is issued for a product as soon as it is offered for entry into the U.S.A. without physical examination, based on past history and/or other information indicating the product may be in violation. A product may be subject to a detention without physical examination (DWPE) recommendation until the shipper, manufacturer or importer demonstrates the product meets HHS/FDA guidelines or standards.

Occasionally, HHS/FDA identifies products from an entire country or geographic region for DWPE when the violative conditions appear to be geographically widespread. Detention recommendations of this breadth are rare and usually are initiated when there are no other avenues for resolving the problem.

In addition to required import entry forms, certain products should be accompanied by the submission of additional information to facilitate processing and to assure compliance with applicable HHS/FDA regulations. For example, foreign manufacturers of low-acid or acidified low-acid canned foods (LACF) must register and file processing information before shipping their product to the U.S.A.. Providing HHS/FDA with the Food Canning Establishment (FCE) number of the manufacturing site as well as the Scheduled Process Identification (SID) number at the time of entry is strongly recommended.

To assure the expeditious handling of imported products, HHS/FDA has automated its import operations. By combining HHS/FDA's Operational and Administrative System for Import Support (OASIS) and CBP's Automated Commercial System (ACS), a HHS/FDA reviewer is able to more efficiently evaluate and process each import entry. The import filer transmits the required shipment-specific HHS/FDA data into the ACS. Within several minutes, the filer is notified that either the shipment has been released or HHS/FDA wishes to review it. This system provides HHS/FDA with immediate data on imported products, provides information on potential problems, and maintains national historical data files to develop profiles on specific products, shippers, manufacturers and importers.

Prior Notice

The Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (Bioterrorism Act) requires that HHS/FDA receive prior notice of food imported into the U.S.A., beginning on 12 December 2003. HHS/FDA and CBP have collaborated on the implementation of the prior notice interim final rule. Nearly all of the current imported food shipments can comply by using CBP's Automated Broker Interface (ABI) of the ACS, and the rest by using HHS/FDA's Prior Notice System Interface (PNSI). Most of the prior notice information required by the interim final rule is data usually provided by importers or brokers to CBP when foods arrive in the U.S.A. Now, the Bioterrorism Act requires that this information also be provided to HHS/FDA in advance of an imported food's arrival to the U.S.A. HHS/FDA uses this advance information to determine whether to inspect the imported food. Failure to comply with prior notice requirements may result in refusal of the food. If refused, food must be held and cannot be shipped to the importer, owner, or consignee until prior notice requirements have been met.

Requiring Certificates for Importation of Food

Unlike FSIS, HHS/FDA does not require that countries exporting food to the U.S.A. supply certificates attesting to compliance with U.S. food safety laws and regulations. The HHS/FDA operates with the expectation that U.S. and foreign food producers and manufacturers will comply with U.S. safety requirements for the product in question, whether imported or produced domestically. Products found to pose a safety hazard or appearing to pose such a hazard, based on reliable information (e.g., testing of previous shipments of the food) are subject to refusal. Similarly, products that are not in compliance with U.S. labelling requirements and are thus "misbranded" also are subject to refusal.

Food products under HHS/FDA's jurisdiction that are entering the U.S.A. need not be covered by an equivalence determination. Although a country may seek an equivalence determination from the U.S., generally such a determination would confer small, if any, advantage in providing greater access to the U.S. market. Nor do food products under HHS/FDA's jurisdiction need to be accompanied by a certificate from the exporting country attesting to the safety of the product or compliance with U.S. requirements. Although certificates are not required for entry of HHS/FDA-regulated food products, HHS/FDA examines and tests the foods being offered for entry into the U.S.A. for food-borne hazards, whether chemical, microbial, or physical. HHS/FDA does require, by regulation, that seafood and juice products be produced under Hazard Analysis Critical Control Point (HACCP) systems, but neither needs export certificates from the government of the exporting country attesting to this fact as a condition for importation.

Conclusions

In the U.S.A., two federal agencies have the primary responsibility for regulating the import of food products. All food products imported into the U.S.A. are required to meet the same standards as domestic goods, and the historical development of the two regulatory agencies and their underlying legal authorities has led them to take different approaches to the regulation of imported food products.

Meat and poultry imports, regulated by FSIS, must originate from countries and facilities judged to have equivalent inspection systems to the U.S.A. and, thus, eligible to export to the U.S.A. HHS/FDA, which regulates all other food products, operates with the expectation that the foreign food producers and manufacturers will comply with U.S. safety requirements. If foods are not in compliance with U.S. requirements and present a public health hazard, both agencies will take swift and firm regulatory action to assure that such foods do not reach the U.S. consumer.

Points of Discussion

The Forum may wish to consider the following points regarding food import/export control and certification systems.

- This paper presents two different approaches for food import/export inspection and certification. Are there other models that countries find effective?
- Apart from resource constraints, are there significant difficulties that countries are experiencing with respect to their food import/export control and certification systems?
- Is there additional international guidance (e.g., additional Codex guidance on food import/export control systems) that should be developed on food import/export control and certification?
- What should be the role of an exporting country government in assuring that its products meet the requirements of an importing country?
- Are there areas where cooperative regional programmes can operate with respect to food import/export certification that can assist those countries that have limited resources to make their existing programmes more effective?

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Agenda Item 5 GF 02/9

SECOND FAO/WHO GLOBAL FORUM OF FOOD SAFETY REGULATORS

Bangkok, Thailand, 12-14 October 2004

Epidemio-surveillance of food-borne diseases and food safety rapid alert systems

(Paper prepared by the FAO/WHO Secretariat)

1. Introduction

An adequate and safe food supply is critical for normal growth and development and to maintain health across the life span. Although the true global incidence of food-borne diseases is difficult to estimate, it is clear that many people fall ill and die as a result of eating unsafe food. Surveillance of food-borne disease is an important tool for maintaining the safety of the food supply. It is instrumental in estimating the burden of food-borne diseases, identifying public health priorities, evaluating disease prevention and control programmes and assessing the relative cost of control measures. It allows rapid detection and response to disease outbreaks and helps identify emerging food safety issues and research needs. In addition, it is a major source of information for conducting risk assessment as part of the new risk analysis framework. Within this framework surveillance data is of paramount importance for conducting a risk assessment and eventually for formulating risk management options and implementing risk communication (1).

Countries differ in their public health systems, giving rise to a wide variation in national surveillance systems including surveillance systems for food-borne diseases. Notably, in many countries the disease surveillance systems do not necessarily focus on food-borne diseases. This paper provides a description of the important aspects of a well-functioning food-borne disease surveillance system including its link to rapid alert systems in the food safety arena. For the purpose of this paper food-borne disease surveillance is defined as the ongoing systematic collection, collation, analysis, interpretation and use of information relevant to the assessment, prevention and control of food-borne disease. This includes epidemiological and microbiological information about pathogens and toxins in food animals and foods, sometimes referred to as monitoring (1).

2. National Surveillance Systems for Food-borne Diseases

There are various levels of intensity and coordination in national surveillance systems. Surveillance can be active or passive, general or sentinel, continuous or intermittent, disjointed or integrated. In general, the intensity of surveillance is a product of social (i.e. priority of disease, societal impact), practical (i.e. availability of epidemiological knowledge) and financial factors. The main objectives of food surveillance are detection of contamination, evaluating control interventions, and monitoring the progress towards a control objective and programme performance. However, surveillance is not merely a routine measure of the current situation (as opposed to monitoring), but a basis for giving qualified feedback to producers, tracing back contamination to its origin, pin-pointing critical (control) points during production and initializing response actions (2).

Many Member States maintain surveillance systems for communicable diseases, which are collaborative efforts based on passive or active surveillance systems and often include a requirement for mandatory reporting of specific diseases and the pathogens that cause them. Many of these existing surveillance systems have the capacity to detect clusters of food-borne disease, provided the cluster is large enough and the effects severe enough to cause people to seek medical attention. However, the focus of these systems is communicable diseases, and their capacity to detect and investigate food-borne illness rapidly may be limited (3).

A number of Member States already maintain surveillance systems to detect and investigate food-borne illnesses caused by food-borne pathogens. In many cases these systems are passive and rely on reporting by laboratories or physicians. Statistical analysis of information from such systems can reveal unusual clustering of illnesses by time or geographical area as compared with baseline values. Unfortunately, passive surveillance systems result in underreporting of disease, because only a small fraction of ill people seek medical care or submit samples for laboratory analysis. Furthermore, laboratories only test for a limited number of disease-causing agents and thus report only selected information to health officials (3). In most cases, hospital laboratories are not equipped to analyze for chemical contaminants present in food. This, in combination with the fact that most diseases caused by chemical contaminants result in nonspecific symptoms, leads to a situation where the burden of disease estimates obtained from most surveillance systems do not include estimates on the part of the disease burden that is related to chemical hazards in food.

Some countries maintain active food-borne disease surveillance systems to determine the burden of disease from food-borne pathogens more accurately. England, the Netherlands and the United States were among the first countries to conduct special studies to understand the disease burden attributable to food-borne pathogens. Following this 'first generation' of studies, a number of other countries, including Australia, Canada and Ireland, launched similar studies. Studies from all these countries fall into two general designs: (i) prospective cohort studies with community etiology components or (ii) cross sectional surveys with or without supporting targeted studies. Although the design determines specific outcomes, all of these studies share the same overarching goal of defining the magnitude of acute gastrointestinal illness by taking into account under ascertainment and determining the proportion of acute gastrointestinal illness attributable to food. Researchers from each of these countries continue to work together closely, sharing research tools, reviewing and analyzing data and discussing future research goals. These active surveillance systems increase the timeliness of information and provide information on the baseline incidence of food-borne illness, which is needed to measure the effectiveness of control measures (4).

Most national surveillance programmes aimed at ensuring that food does not contain unacceptable levels of contaminants are designed to measure selected chemical contaminants in a variety of raw agricultural commodities. Since the concern for chemical contamination is chronic disease and not acute illness, surveillance for chemical contaminants focuses on ensuring that the level of contaminants is below a predetermined maximum allowable limit rather than linking the contaminant level to an acute illness. When chemical contaminates are below the maximum allowable limit, consumers can be assured that the product has been produced according to good agricultural practices and their exposure to the chemical contaminant will be below the established acceptable daily intake level.

3. Globalization of the Food Supply: The Need for Global Surveillance

By virtue of the international nature of travel and trade, food safety has increasingly become a global issue. There have been many documented cases of contamination of food from one country causing significant health effects in other parts of the world (3). Couple the massive global trade of food and animal feeds with other factors affecting the global food supply and safety such as population growth, poverty, adverse climatic and social events; and the need for a globally coordinated strategy to control food illnesses becomes acutely apparent.

Concerns about the global spread of food-borne disease can best be addressed through strong surveillance systems, renewed commitment to public health, and strong international partnerships that strengthen national efforts of food-borne disease prevention and control. In view of the disparity among national surveillance systems, partnerships in global surveillance are a logical starting point.

4. The Role of the World Health Organization (WHO) in Food Safety Surveillance

4.1 Mandates and Regulations

To be effective, global surveillance must be free of political bias. Global surveillance requires a neutral reporting and response environment. WHO is the international health organization with a primary mandate to protect public health and to provide technical assistance and advice to Member States on all health issues. In 1969, WHO adopted International Health Regulations (IHR) after agreement by the international community. These regulations represent the only regulatory framework for global public health security. The IHR prevent the international spread of infectious diseases by requiring national public health measures that are applicable to travellers and products at the point of entry. While the current IHR require Member States to notify WHO only of all cases of cholera, plague and yellow fever; the IHR are undergoing revision to meet the increasingly complex risks of existing and emerging infectious diseases. The revisions proposed include a requirement to notify WHO of all public health emergencies of international concern. In view of the need to contain disease and public health risks at their origin and to minimize international control measures, Member States would be obliged to identify and control all events of international public health importance, including infectious and non-infectious diseases as well as unacceptable levels of microorganisms, toxins and chemicals in food (3).

The new proposed IHR will provide guidelines for implementing the required surveillance and response programmes for public health emergencies. Essential elements of the programme include rapid detection and reporting of public health emergencies, verification and preliminary control measures and response capacity, including notification to WHO of events or risks of international significance. This includes notification of a need for assistance to contain or control further spread of the contamination, and for travel and traffic restrictions on the movement of people, conveyances and goods including food, plants and animals. Information and recommendations developed by WHO will serve as a guide for responses appropriate to the actual health risk (3).

In 2000, the 53rd World Health Assembly (WHA) adopted a resolution to recognize food safety as an essential public health function and called for the development of a Global Strategy for reduction of the burden of food-borne diseases. The resolution WHA 53.15 encouraged Member States to implement and keep national, and when appropriate, regional mechanisms for food-borne diseases surveillance. In 2002, WHO published a Global Strategy for Food Safety (5). The overall objective of this strategy is to strengthen surveillance of food-borne disease to provide Member States with the data necessary to reduce the burden of food-borne disease.

4.2 Global Initiatives to Enhance Surveillance on Food-borne Illnesses

A recent WHO Expert Consultation defined four surveillance categories (No formal surveillance, Syndromic surveillance, Laboratory-based surveillance, Integrated food chain surveillance) and discussed the feasibility of establishing sentinel surveillance in regions lacking reliable food-borne disease estimates. The attributes of each of these four surveillance systems are summarized in Table 1. Following this Consultation, studies on the burden of food-borne disease in developing countries were initiated. Jordan has been selected as the first sentinel site for this project and the selection of additional sites is underway[1](6).

Table 1. Surveillance systems in relation to the assessment of the burden of disease

Surveillance Category	Expected Outcomes	Contribution of Surveillance System to Burden of Disease Assessment	External Support Required to Conduct Burden of Disease Assessment	Resources and Cost Associated with Conduction Burden of Disease Assessment	Ability of Surveillance System to Attribute Disease to Specific Food Sources	Usefulness of Surveillance Data to Contribute to Risk Analysis
1. No formal surveillance	Non-specific disease parameters	None	High	Minimal	None	None
2. Syndromic surveillance	Non-specific disease parameters	Limited	Moderate	Minimal	None	Limited
3. Laboratory-based surveillance	Etiology-specific, including subtypes	Potentially significant	Minimal	Increased complexity, laboratory and epidemiological cost	Moderate	Potentially significant
4. Integrated food-chain surveillance	Etiology-specific, including subtypes, greater precision, population-based reservoirs	Significant	None	Increased complexity, laboratory and epidemiological costs, including food and agricultural laboratories	High	High, allows validation of models

Table adapted from (6).

4.3 Global Food Surveillance Programmes

In order to engender the political will required to initiate and sustain a strategy to reduce food-borne disease, the magnitude of the problem must be determined. Global surveillance information can also be used by countries to perform rapid risk assessments and prioritize food safety needs. WHO has implemented a number of sentinel site programmes to develop special studies in regions currently lacking good data on food-borne illnesses and has created a network connecting countries involved in these surveillance activities related to acute gastrointestinal illnesses. One of the global programmes designed to strengthen surveillance of food-borne disease is Global Salm-Surv. Global Salm-Surv is a laboratory based surveillance system that has been operational since January 2000. It consists of a network of institutions and individuals involved in *Salmonella* surveillance, serotyping and antimicrobial resistance testing. This programme, initiated by the WHO, the Danish Veterinary Laboratory (DVL) and the Centers for Disease Control and Prevention (CDC) and now also supported by the Institute Pasteur, United States Food and Drug Administration, Health Canada and Wageningen University; endeavours to reduce the global burden of food-borne disease by strengthening national and regional surveillance and response activities (7). The WHO Global Salm-Surv external quality assurance system (EQAS) is an important step toward improving the quality of Salmonella serotyping and antimicrobial susceptibility testing worldwide (7). The core elements of the Global Salm-Surv programme include regional training workshops, a moderated electronic discussion group, an external quality assurance system, a country databank of annual *Salmonella* surveillance summaries, a web site http://www.who.int/emc/diseases/zoo/SALM-SURV/index.html and reference testing services. Training workshops for microbiologists and epidemiologists have involved numerous representatives from almost 100 countries from all six WHO designated regions.

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[1] The criteria for assessing the suitability of a country for inclusion in a burden of illness study were defined as: (i) lack of data on burden of food-borne disease in the country and the region, (ii) preferably in surveillance category 3 (laboratory based surveillance), (iii) availability of data on food consumption and contamination, the extent and nature of scientific and technical resources and infrastructure, (v) preference given to countries with geographical diversity, (vi) selecting a country with a broad representation of ethnicity and socio-economics and (vii) insuring that duplicate efforts by other organizations have not been done.

WHO also monitors and performs exposure assessments of chemical contaminants in food. The WHO Global Environmental Monitoring System/Food Contamination Monitoring and Assessment Programme (GEMS/Food) provides information on the concentration of chemical contaminants in food, their contribution to total human exposure and their significance for public health and trade. GEMS/Food provides baselines of chemical contaminants in food that may be used to assess contamination. The Programme is an important component of the global risk assessment of chemicals in food and provides exposure assessments that form part of the basis for setting national and international food safety standards. GEMS/Food maintains a network of WHO Collaborating Centres, national focal points and participating institutions located in over 70 countries. It maintains links with international organizations such as Food and Agriculture Organization of the United Nations (FAO), the International Atomic Energy Agency (IAEA), the United Nations Environment Programme (UNEP) and nongovernmental organizations such as the International Union of Food Science and Technology (IUFoST) and the International Union of Pure and Applied Chemistry (IUPAC)(3).

4.4 Global Outbreak Alert and Response Systems

Under the WHO Programme on Global Alert and Response, WHO has established a mechanism for providing accurate and timely information about important disease outbreaks. This information is delivered systematically and rapidly to key professionals in international public health through the international networks for specific disease surveillance including FluNet for influenza, RabNet for rabies, Global Salm-Surv for salmonellosis and DengueNet for dengue (3).

Outbreak verification is a new approach to global disease surveillance that aims to improve control of epidemics by active collection and verification of information on reported outbreaks. Verification of outbreaks is based on a broad range of sources of information, including the Global Public Health Information Network (GPHIN). GPHIN is a Web-based electronic system developed by Health Canada in collaboration with WHO, which scans the Web to identify suspected disease outbreaks. The suspected outbreaks are followed up with the affected countries to verify the existence of the epidemic, its cause and the control measures being taken. The information is then disseminated via the outbreak verification list to over 900 institutions and key decision-makers in international public health, such as WHO Collaborating Centres, national institutes of public health and the major non-governmental organizations. Since 1996, over 500 outbreak reports have been investigated and the information disseminated when it was found to be of international public health importance. WHO offers assistance in all cases (3).

The WHO Global Outbreak Alert and Response Network (GOARN) provides immediate public health assistance for the containment of disease outbreaks. The Network provides a coordinated mechanism for outbreak alert and response. It consists of a technical partnership between institutions and networks and complements existing systems. Its role is to combat the international spread of outbreaks by rapid identification, verification and communication of threats, leading to a coordinated response. It ensures that appropriate technical assistance reaches the affected Member State rapidly, minimizing the health impact of the outbreak and preventing further spread of disease. WHO responds to requests from Member States for assistance in outbreak management by fielding special teams of experts. Recent examples of outbreaks in which WHO participated directly in the field include: Rift Valley fever in Kenya and Somalia, monkey pox in the Democratic Republic of Congo, avian influenza (H5N1) in Hong Kong (China)(3).

4.5 Improving Global Food Safety through an International Food Safety Authorities Network (INFOSAN)

In addition to providing necessary information for monitoring outbreaks of food-borne diseases and evaluating control measures, global surveillance can serve as an early warning system for food outbreaks and provide the rationale for public health intervention including the cessation, and resumption, of trade. Early detection of food-borne diseases and immediate public health intervention can not only limit the number of illnesses and deaths, but also lessen the negative effects on international travel and trade. Global food-borne disease surveillance and response is a decisive element in maintaining public health and facilitating trade of food, plants, animals, and animal products (8).

WHO, together with FAO, is now enhancing its ability to respond to food-borne disease emergencies by establishing an International Food Safety Authorities Network (INFOSAN), an information network for the dissemination of important information about global food safety issues. In January 2003, WHO identified the need for a food safety network to complement and support the existing WHO information and response programmes. INFOSAN is designed to enhance the ability of the GOARN Network to combat the international spread of food-borne disease by rapid identification, verification and communication. Embedded in INFOSAN is INFOSAN EMERGENCY, this food safety emergency network will help to minimize the health impact of food-borne disease outbreaks and prevent further disease spread by an implicated food (8).

Each participating country will have one or several INFOSAN Focal Points. The INFOSAN Focal Points are expected to receive INFOSAN information and disseminate it. Several INFOSAN Focal Points may be identified in countries where responsibilities are divided among several *food safety authorities*, including those involved in food legislation, food control and management, food inspection services, laboratory services for monitoring and surveillance, and information, education and communications, across the so-called farm-to-fork continuum (8).

Each country will have one dedicated INFOSAN EMERGENCY contact point that, in addition to receiving the general information, will be activated to deal with major international incidents involving an imminent risk of serious injury or death to consumers. INFOSAN EMERGENCY will be used to alert food safety authorities to food-borne disease outbreaks or food contamination events of international significance. The INFOSAN EMERGENCY Contact Point will be expected to accept some notification and response responsibility and to facilitate the communication of urgent messages during food safety emergencies. INFOSAN EMERGENCY will be closely linked to the GOARN Network (http://www.who.int/csr/sars/goarn/en/ index.html) at both the national and international levels. INFOSAN and INFOSAN EMERGENCY are limited to government entities or entities appointed by government (8).

5. The Role of Surveillance in Assessing New Technologies and Emerging Risks

Many countries have well developed, established surveillance systems for monitoring food and the environment for chemical contaminants such as dioxins, PCBs, heavy metals and residues of pesticides and veterinary drugs. Surveillance systems directed at food-borne pathogens are more recent as are microbiological risk assessments and pathogen reduction programmes. The development of a comprehensive food safety surveillance framework not only enables the continued assurance of food safety regarding known chemicals and pathogens, but provides a mechanism to protect against emerging hazards.

The application of modern biotechnology to food production presents new opportunities and challenges for human health. The potential benefits to consumers include enhancing the nutrient content of foods, decreasing their allergenic potential, and improving the efficiency of food production. On the other hand, the potential effects on human health of the consumption of food produced through genetic modification must be carefully examined. Modern biotechnology must be thoroughly evaluated if it is to bring about a true improvement in our way of producing food. Having a fully functioning, global food safety surveillance network will provide an added measure of confidence to consumers across the world that the safety of food produced by genetic engineering is being monitored.

Antimicrobial agents are essential medicines for human and animal health and welfare. The development of antimicrobial resistance is a global public and animal health concern that is impacted by both human and non-human antimicrobial usage. A comprehensive food safety surveillance framework will not only be capable of the monitoring food-borne pathogens but will be capable of determining the development of antimicrobial resistance in these pathogens when it is associated with the use of antimicrobials in agriculture and veterinary medicine. This information is critical for determining risks associated with the development antimicrobial resistance for specific microorganism-antimicrobial combinations and for developing risk management options aimed at reducing the risk associated with the use of antimicrobials in agriculture and veterinary medicine.

6. Food Surveillance to Detect the Malicious Intentional Contamination of Food

The intentional malicious contamination of food is not a new threat. However, the centralization of food production and the widespread distribution of food enhances the potential public health impact of intentional food contamination. The potential impact on human health of deliberate sabotage of food can be estimated by extrapolation from the many documented examples of unintentional outbreaks of food-borne disease. The largest, best-documented incidents include an outbreak of *S. typhimurium* infection in 1985, affecting 170 000 people, caused by contamination of pasteurized milk from a dairy plant in the United States of America. An outbreak of hepatitis A associated with consumption of clams in Shanghai, China, in 1991 affected nearly 300 000 people and may be the largest food-borne disease incident in history. The number of people impacted by an intentional contamination incident is likely to be considerably higher.

In 2002, WHO published a report on "Terrorist Threats to Food: Guidance for Establishing and Strengthening Prevention and Response Systems" (3). This report identified two major strategies for countering the threat of food sabotage, i.e., prevention and response, including preparedness. According to the report, the key measures needed to prevent food terrorism include the establishment and enhancement of existing food safety management programmes and the implementation of reasonable security measures. Detection of the food contamination is needed to activate a response.

The main requirement for rapid detection of covert or overt acts of food terrorism is a surveillance system with the sensitivity to rapidly identify small clusters of food-borne illness. Such systems permit identification of disease outbreaks, whether intentional or unintentional, but do not necessarily permit the identification of the disease or its mode of transmission. Strong national surveillance systems provide information on the expected frequency and size of various disease outbreaks, thus providing a baseline for identifying unusual clusters that might herald a terrorist incident. Early detection of disease resulting from food terrorism will depend upon sensitive general surveillance systems for communicable disease at local and national levels, with close cooperation and communication among clinicians, laboratories and public health professional. Once food terrorism is detected, there is a need to activate response systems including verification of the threat, management of the consequences by aiding the affected population, identification and removal of the food from sale and management of the social, political and economic consequences of the act (3).

The report concluded that effective preparedness for food terrorism requires both strengthening of the general public health surveillance and improving coordination and communication among the sectors responsible for an emergency response. The lack of integrated surveillance, epidemiological and laboratory activities and lack of preparedness planning for emergency response in many developing countries are still significant obstacles to effective detection and response to threats posed by the deliberate as well as unintentional introduction of hazardous agents into food (3). The assistance of WHO and FAO can help prevent, quickly detect and mitigate the effects of food terrorism, as well as the effects of unintentional food-borne outbreaks and contamination events. The new INFOSAN network is intended to support this work.

7. Concluding remarks

Both industrialized and developing countries can best address concerns about food-borne disease including those from new technologies and intentional acts of terrorism through strong surveillance systems, renewed commitment to public health and strong international partnerships. There is a need for a common high standard of food safety to protect consumers worldwide. Surveillance programmes serve as a tool for monitoring and continuous improvement of food quality through detection of food-borne illnesses or contamination in food production and initiation of appropriate responses. Since the challenge is to produce safe food at affordable prices, surveillance programmes need to be sensitive, sensible and cost efficient. Currently, the infrastructure and capacity needed to efficiently coordinate and operate national food-borne contaminant and food-borne disease surveillance programmes varies among countries worldwide. International organizations have a major role to play in promoting integration of food safety surveillance at the national and international level.

The WHO and FAO have a critically important roles to play in food safety at the international level. The WHO, in many cases in direct collaboration with FAO, functions to implement the International Health Regulations (IHR); coordinate worldwide disease surveillance networks; and coordinate international responses to communicable diseases. FAO and WHO work to assess the health risks associated with chemical and biological agents and radio nuclear materials and the potential to mitigate such risk as well as support the development of food safety infrastructure in Member States. These functions place these organizations in a unique position to play a key role in: 1) the coordination of global surveillance for food safety emergencies; and 2) the facilitation of responses to food emergencies of international significance to human health; and 3) the provision of technical assistance for national preparedness and response. The development of INFOSAN and INFOSAN Emergency will enhance the efforts of WHO and FAO in providing the world with a safe food supply.

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Agenda Item 5.1 GF 02/10

SECOND FAO/WHO GLOBAL FORUM FOR FOOD SAFETY REGULATORS

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Food contamination monitoring and food-borne disease surveillance at national level

(Paper prepared by Lo Fo Wong DMA[1], Andersen JK[2], Nørrung B[2], Wegener HC[1])

Abstract

Cost-efficient monitoring of food contamination and surveillance of food-borne diseases requires a coordinated multidisciplinary approach with the participation of stakeholders from all sectors of the "farm-to-fork" continuum including the public health sector. To facilitate communication and coordination, establishment of a coordinating body with the participation of relevant stakeholders is recommended. Furthermore, relevant surveillance data from all stages in the food production chain and from the surveillance of human disease should be continuously collected and analyzed to evaluate trends and sources of food-borne disease. The establishment of a dedicated multidisciplinary surveillance unit involving epidemiological and microbiological expertise from all sectors can facilitate this type of coherent data analysis and feed back. Systems such as these can be operated at the national, regional and global level.

Monitoring And Surveillance as Tools in Food Safety Assurance

In order to address and manage food safety, it is imperative to have knowledge on the current situation and trends with regard to the occurrence and spread of human pathogens in the food production chain. This knowledge needs to be updated continuously so that appropriate responses can be prepared. Activities involved in such a system are gathered under the terms 'monitoring' and 'surveillance' (Fig. 1). Monitoring can be defined as: "*the performance and analysis of routine measurements, aimed at detecting changes in the environment or health status of populations*". Surveillance can be defined as: "*the ongoing systematic collection, collation, analysis and interpretation of data, followed by the dissemination of information to all those involved so that directed actions may be taken*" (WHO/CDS/CSR).

Surveillance refers to a specific extension of monitoring where obtained information is utilized and measures are taken if certain threshold values related to disease status have been passed (Noordhuizen and Dufour, 1997). The main objectives of surveillance are outbreak detection, monitoring trends in endemic disease, evaluating interventions, and monitoring programme performance and progress towards a predetermined control objective. However, surveillance is not merely a routine measure of the current situation (as opposed to monitoring), but a basis for giving qualified feed-back to producers, tracing back contamination to its origin, pin-pointing critical (control) points during production and initializing targeted action.

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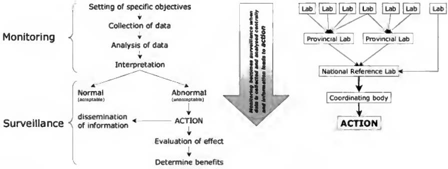

Figure 1. Graphic presentation illustrating the relation between monitoring and surveillance.

There are various levels of intensity and coordination in surveillance systems. Surveillance can be active or passive, general or sentinel, continuous or intermittent, disjointed or integrated. In general, the intensity of surveillance is a product of social (i.e. priority of disease, societal impact), practical (i.e. availability of epidemiological knowledge) and financial parameters.

The Need for a National Approach

Pathogenic microorganisms can enter the food chain at any point, from livestock feed, via the on-farm production site, at the slaughterhouse or packing plant, in manufacturing, processing and retailing of food, through catering and home preparation. Since there are numerous possible routes for transmission of pathogens throughout production, isolated actions (e.g. decontamination of animal feed) will in most cases not ensure lasting consumer protection. In order to effectively manage the problem of food-borne disease, measures should be considered at all levels of production. This requires a coordinated surveillance and response effort from all major stakeholders in food safety.

The food industry is responsible for the quality and the safety of their products and is therefore a major stakeholder in food safety. Production may be monitored through, for example, certification programmes, process control schemes or HACCP (Hazard Analysis Critical Control Points) based control programmes. These control activities generate data that can constitute an important contribution to national surveillance programmes. Also, in an outbreak investigation, additional sampling may be required to trace-back human infection to the point of contamination in the food-production chain. Close cooperation between the private and public sector is therefore imperative.

In general, the main stakeholders in food safety representing the government are the Ministries of Health and the Ministries of Agriculture/Food. Under them are agencies that are responsible for the legislative, technical and practical implementation of food safety programmes, and each agency often has a dedicated reference laboratory associated with it. The access to surveillance data often goes through these laboratories. These two or possibly three organizational structures often run independent of each other. In order to get a comprehensive view of the national food safety status, the two Ministries and their respective agencies and reference laboratories should work closely together.

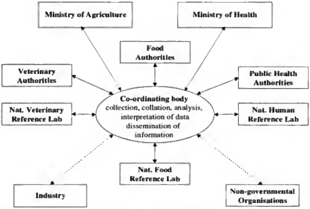
Ministry of Agriculture
Ministry of Health
Food Authorities
Veterinary Authorities
Public Health Authorities
Co-ordinating body
collection, collation, analysis, interpretation of data dissemination of information
Nat. Veterinary Reference Lab
Nat. Human Reference Lab
Nat. Food Reference Lab
Industry
Non-governmental Organisations

Figure 2. Schematic presentation of the collection, collation, analysis and interpretation of surveillance data and the subsequent dissemination of information to all the major stakeholders in food safety.

Finally, other stakeholders of food safety are the non-governmental organizations. They may represent consumers, food industry workers or the environmentalists. Although these organizations seldom are directly involved in the generation of data, they can influence the launching of food safety initiatives and serve as a driving force behind initiation of surveillance efforts.

The main challenge is to develop structures that ensure the systematic collection, collation, analysis and interpretation of surveillance data and communication to all public and private stakeholders involved (Fig. 2). For this purpose, one or more coordinating bodies or steering committees with representatives of all stakeholders may be formed. The integration of all surveillance data from farm-to-fork in a coherent analysis and subsequent interpretation may be the task of a specialized multidisciplinary research unit, which reports to the relevant coordinating bodies or steering committees. The evaluation by these committees can then lead to a coordinated response.

Integration of surveillance activities to the national level facilitates optimization and cost efficiency in the generation and utilization of surveillance data. The challenge is to optimize the sensitivity of the surveillance system while minimizing the costs. For example:

- Integration of surveillance components within and between links of a production chain, e.g. to investigate possible associations between the levels of food-borne pathogens in food animals and in food products at retail;
- Integration of different surveillance programmes of the same production animal, e.g. using the same serum samples for the detection of antibodies against both Salmonella and PRRS;
- Integration of different surveillance programmes for different production animals, e.g. to estimate the relative contribution of the main reservoirs to the total number of human cases of food-borne illness;

- Integration of national surveillance programmes to rapidly recognize and report international outbreaks, e.g. EnterNet, OzFoodNet and Global SalmSurv.

The integration of food-borne disease surveillance activities can be achieved through: 1) communication, 2) collaboration, 3) coordination and 4) central storage of data. Communication between major stakeholders can be maintained during regular meetings and direct, informal contact between veterinary and public health workers in key-positions. Collaboration consists mainly of the routine exchange of data and participation in outbreak investigation and response. Control activities and the sharing of information need to be coordinated, within and between programmes. Managing a central database containing all surveillance data allows for coherent analyses of the relation between food-borne-pathogen reservoirs and disease in time and space. These four components ensure the optimal use of data that already is being generated.

The Role of National Monitoring and Surveillance in Risk Analysis

Though the main purpose of surveillance is disease control, surveillance data is widely used as part of a risk analysis framework (i.e. in risk assessment and risk management) (Fig. 3). Surveillance programme outcome allows for the detection of events and developments that require a detailed evaluation of the situation (i.e. risk evaluation). By incorporating results from all pertinent lines of investigation (e.g. monitoring and surveillance programmes, outbreak investigations, surveys, analytical studies), risk assessors can develop risk models that are used to evaluate alternative intervention and control strategies.

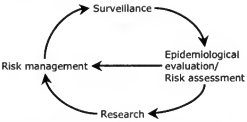

Figure 3. The cycle of public health protection, illustrating the role of surveillance in supporting risk assessment, risk management and formulating new research efforts.

Results from risk assessments provide decision-support to risk managers. The options provided by the risk assessment are evaluated together with social and financial factors (i.e. option assessment). Subsequently, the effect of risk management actions can be monitored through surveillance (i.e. monitoring and review).

Salmonella Surveillance in Denmark - An Example of an Integrated Approach

In Denmark, the successful implementation of a number of surveillance and control programmes can be accredited to the close cooperation between public sector and private industry (Wegener et al., 2003). The authorities have delegated the responsibility for technical coordination of the programmes to committees with representatives from the industry, government bodies and science. In the planning and implementation of programmes, there has been a close involvement of microbiologists and epidemiologists. In addition, there is a very close collaboration between medical and veterinary epidemiologists and microbiologists in monitoring the effect of the programmes on the incidence of human infection.

To initiate and generate the basis for targeted action, the Danish Zoonosis Centre was established in January 1994. The Zoonosis Centre is an epidemiological surveillance and research unit recently moved under the newly formed Ministry of Family and Consumer Affairs (previously the Ministry of Food, Agriculture and Fisheries). The Zoonosis Centre collects all data from all national surveillance and control programmes on zoonoses and conducts an ongoing analysis of the national zoonosis situation from farm-to-fork, including the identification of outbreaks, the assessment of sources of human food-borne disease as well as basic epidemiological research.

A report on trends and sources of zoonoses in Denmark is published annually by the Zoonosis Centre (Fig. 4), in hard copy and on the Internet (http://www.dfvf.dk/Default.asp?ID=9606).

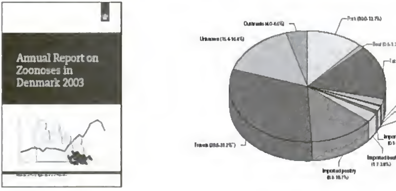

Figure 4. Annual Report on Zoonoses in Denmark with the estimated attribution of major animal reservoirs to human salmonellosis

The report includes an annual account of major sources of food-borne salmonellosis based on surveillance, as well as an overview of the trends in the estimated attribution of these sources to human infection since 1988. Detailed knowledge of the distribution of *Salmonella* subtypes in all relevant food animals and food types, generated through intensive and continuous monitoring, is an essential prerequisite for the analysis (Hald et al., 2004).

The Zoonosis Centre conducts quarterly meetings where the current status of the human incidence and control programmes on food-borne zoonoses is communicated to relevant stakeholders. The stakeholders are organized in three so-called "coordination-groups". The first coordination-group also serves as a board for the Zoonosis Centre. It has representatives of all government agencies and institutions involved in monitoring and control of food and water borne infections. This group includes; Statens Serum Institut, the Danish Veterinary and Food Administration, the Danish Plant Directorate, the Danish Institute for Food and Veterinary Research, the National Board of Health, the Danish Environmental Protection Agency and the Royal Veterinary and Agricultural University. The second coordination-group represents the producers; the Danish Bacon and Meat Council, the Danish Meat and Livestock Board, the Danish Dairy Board, the Federation of Egg Producers, the Federation of Slaughter Poultry Producers and the National Board of Agricultural Producers. The third coordination-group consists of "other interested parties", such as the National Consumers Board, the National

Retailers Board, the Union of Food Industry Workers, the Danish Industry Board and the Federation of Hotel and Restaurant Owners. The Centre is also responsible for communication to the general public and the media through press-releases, printed reports, publications, and a website.

A number of other countries have in recent years established similar or related structures to improve surveillance and facilitate communication and coordination. These countries include Finland, Germany, Ireland, Norway, Sweden, United Kingdom, and many more.

Food Contamination Monitoring at the National Level in Denmark

The organization of the Danish food control system has been changed over the last 5 years. Previously, food control at the retail level was carried out by a large number of local food control units that referred to local authorities. Apart from the fact that the local control administration was not cost efficient, the organization was flawed by heterogeneity in several important aspects, such as the evaluation of microbiological results and in prioritizing control activities. Also the decentralized organization of these control units created problems when dealing with nationwide establishments. Re-organization has put the regional laboratories under direct supervision of the national food authority, instead of the local administrations. The control of food production from farm-to–fork was hereby joined in one body, under direct governmental jurisdiction. Furthermore, in the retail sector there has been a movement towards increased own-control in recent years. The implementation of HACCP in the producers' own control programmes has reduced the degree of involvement of the authorities in the organization of food control systems.

Currently, the inspection and control is more of an auditing nature with emphasis on generating general knowledge on the contamination on food items, instead of specific knowledge on the general hygiene in establishments, i.e. microbiological testing is focused on collecting data on the occurrence of specific pathogens in various food commodities as compared to earlier where testing for indicator organisms for monitoring of the general hygiene was very common. Thus, the food control in the retail sector is aiming more at collecting information needed to improve human health. Fewer samples are taken on a routine basis, and more samples are taken to gather information on specific problems or to obtain information needed to perform activities within a risk analysis framework (Fig. 3).

Elucidation of specific problems and gathering of information for the use in Risk Analysis are performed in so-called "Centrally coordinated projects". The shift in focus is illustrated by the fact that the number of samples collected for surveillance of general hygiene in retail shops has decreased from 79,000 in 1998 to 23,000 in 2003. In the same period the number of samples collected for specific projects has increased from 3000 in 1998 to 17,000 in 2003.

These projects are carried out to collect information on pathogen/commodity combinations needed in risk analysis. This knowledge may be needed in Risk Assessment (i.e. for gathering data on Exposure Assessment) as well as in Risk Management (i.e. for the Monitoring and Review of the impact of Risk Management options. The centrally co-coordinated projects performed in 2003 are presented in Table 1.

Table 1. Centrally co-coordinated microbiological projects performed in Denmark in 2003, with the number of samples investigated.

Aim	Project	No. of samples
Risk Profiling	Presence of VTEC O26, O103, O111 and O143 in beef cattle	1500
	Presence of Campylobacter in pre-cut ready-to-eat salad	500
Risk Assessment	Effect of different reduction strategies on the number of Campylobacter on broilers at slaughter level	2000
	Presence and number of Campylobacter on turkeys during slaughter combined with antibiotic resistance testing	1500
Risk Management	Surveillance programme on antibiotic resistance in bacteria from foods (DANMAP)	1000
	Listeria monocytogenes in ready-to-eat foods	1200
	Vibrio in seafoods (EU control campaign)	1000
	Total	**8700**

The content of these "Centrally coordinated projects" are decided each year through a process involving the central and regional authorities as well as the Danish Institute for Food and Veterinary Research.

Concluding Remarks

The detection of changes of food-borne diseases patterns and variations in the contamination in the food production process are an absolute necessity for the monitoring and continuous improvement of food quality and safety. These programmes need to be sensitive, sensible and cost efficient. Food contamination monitoring and food-borne disease surveillance at national level provides a timely and comprehensive overview of the veterinary and public health status of a nation. The integration of food-borne disease surveillance has the goal to gather all national surveillance activities in a common public service that carries out many functions using similar structures, processes and personnel. The infrastructure of an established surveillance programme in one area may serve as a framework for strengthening other surveillance activities. Though some food-borne diseases may have specific information needs, requiring specialized systems, there may be the potential for synergy and the sharing of common resources.

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Agenda Item 5.2 GF 02/11

SECOND FAO/WHO GLOBAL FORUM OF FOOD SAFETY REGULATORS
Bangkok, Thailand, 12-14 October 2004

INTERNATIONAL COOPERATION ON FOOD CONTAMINATION AND FOODBORNE DISEASE SURVEILLANCE
(Prepared by the United States of America)

Introduction

A primary challenge in the 21st Century is to minimize food safety risk to consumers as the scientific complexity of food grows, and as trade, regulation, new health threats, and consumption patterns continue to change, particularly with respect to the global food supply. The World Health Organization (WHO) reports that surveillance of food-borne diseases is becoming an increasingly high priority in the public health agenda in many countries. Such surveillance helps estimate the burden of food-borne diseases, assess its relative impact on health and economics, evaluate disease prevention and control programmes, and allows for rapid detection of and response to outbreaks. It is also a major source of information for conducting risk assessment, and more broadly for risk management and communication. Food-borne disease surveillance should be integrated with food monitoring data and data from food animals along the entire feed-food chain. Integrating such data would result in robust surveillance information and allow appropriate priority setting and public health interventions. Intersectoral, inter-institutional, and international collaboration are of paramount importance. National surveillance is of varying intensity depending on the country and region on the globe. Additionally, methods used are not necessarily uniform, making data interpretation difficult. Organizations such as the WHO, the World Organization for Animal Health (OIE), and the Food and Agriculture Organization of the United Nations (FAO), are working to improve international surveillance.

With respect to the United States, the U.S. Department of Health and Human Services' (HHS) Centers for Disease Control and Prevention (HHS/CDC), in close collaboration with State and Territorial Departments of Health, are responsible for conducting human disease surveillance. The U.S. Department of Agriculture's (USDA) Food Safety and Inspection Service (FSIS), as well as the HHS' Food and Drug Administration (FDA), closely monitor this disease surveillance through a variety of human and technological liaison activities described below. FSIS and HHS/FDA react to episodes of food-borne disease based on epidemiological information from HHS/CDC or other state and local health authorities linking illnesses to food products. However, both FSIS and HHS/FDA would benefit from better coordination, both nationally and internationally, linking what we see in terms of surveillance with what we observe with foods.

Existing Surveillance Systems and the Development of International Cooperation

United States Continental Alert and Monitoring Systems

HHS/CDC maintains routine national surveillance for individual cases of food-borne infections that depend on regular reporting from state public health departments. These nationally notifiable disease reporting systems collect limited standard information, help track trends in those infections, and alert local, state and national health authorities to potential outbreaks. Serotyping clinical isolates of Salmonella at state public health laboratories is a critical part of this surveillance. In addition, HHS/CDC also maintains a reporting system for food-borne outbreaks that are investigated and reported by local and state health departments. This is a web-based reporting system called the Electronic Food-borne Outbreak Reporting System (EFORS). EFORS collects standardized information on more than 1200 reports of outbreaks each year.

HHS/CDC also conducts active surveillance for food-borne disease through a collaborative active surveillance network called FoodNet. The Food-borne Diseases Active Surveillance Network (FoodNet) is the principal food-borne disease component of HHS/CDC's Emerging Infections Programme (EIP). FoodNet is a collaborative project of the HHS/CDC, 10 EIP sites (California, Colorado, Connecticut, Georgia, New York, Maryland, Minnesota, Oregon, Tennessee and New Mexico), USDA, and HHS/FDA. The project consists of active surveillance of food-borne diseases and related epidemiologic studies designed to help public health officials better understand the epidemiology of food-borne diseases in the United States. Food-borne diseases include infections caused by bacteria such as Salmonella, Shigella, Campylobacter, Escherichia coli O157:H7, Listeria monocytogenes, Yersinia enterocolitica, and Vibrio, and parasites such as Cryptosporidium and Cyclospora. In 1995, FoodNet surveillance began in five locations: California, Connecticut, Georgia, Minnesota, and Oregon. Each year, the surveillance area, or catchment, has expanded, with the inclusion of additional counties or additional sites (New York and Maryland in 1998, Tennessee in 2000, Colorado in 2001 and New Mexico in 2004). The total population of the 2003 bacterial catchment is 37.6 million persons, or 13.8% of the United States population. FoodNet provides a network for responding to new and emerging food-borne diseases of national importance, monitoring the burden of food-borne diseases, and identifying the sources of specific food-borne diseases. FoodNet provides accurate and detailed surveillance information about those infections for which surveillance is variable or non-existent from state to state. FSIS and FDA's Center for Food Safety and Applied Nutrition (CFSAN) also participate in the FoodNet surveillance activities. For more information see www.cdc.gov/foodnet.

PulseNet, the national molecular subtyping network for food-borne disease surveillance, was established in 1996 by HHS/CDC and several state health department laboratories to facilitate subtyping bacterial food-borne pathogens for epidemiologic purposes. PulseNet reached full national participation in 2001. Public health laboratories in all 50 states routinely determine the molecular fingerprints of Escherichia coli O157:H7, Listeria monocytogenes, and regularly subtype common serotypes of Salmonella; standard protocols have also been developed for subtyping a growing number of other food-borne pathogens. Food regulatory laboratories at HHS/FDA and FSIS also participate, and HHS/CDC maintains the national database of patterns. Rapid electronic comparison of strain patterns in state and national databases provides early detection of clusters of related infections, guiding investigations, and verifying control. PulseNet identifies potential outbreaks that otherwise would have been missed, particularly those that are widely dispersed. Identifying and investigating such outbreaks can identify system problems in food safety, so that they can be corrected. For example, with the regular use of PulseNet, the frequency of detected outbreaks of listeriosis in the United States has increased from one every five years to two per year, focusing attention on critical points of control within the food safety system. For more information see www.cdc.gov/pulsenet.

In collaboration with WHO, the HHS/CDC helped to establish the International Collaboration on Food-borne Diseases "Burden of Illness Studies" Network in March 2004, as a means of establishing communications and collaboration among nations developing burden of illness studies, specifically with respect to acute gastrointestinal illness and food-borne disease.

Food-borne outbreak investigations are a critical part of the food safety system. New and recurrent food-borne hazards can be rapidly identified by investigation of food-borne outbreaks. Careful investigation of an outbreak, including tracing the food from farm to table and reconstructing the means of contamination, is critical to move the food safety agenda forward when new hazards emerge. Most outbreaks are investigated and controlled by local and state health departments. HHS/CDC routinely consults with the state health departments as they investigate outbreaks, launches emergency field investigations to assist them in large, complex or unusual outbreaks, collaborates with HHS/FDA and USDA/FSIS on the traceback of implicated food items to their origins, and coordinates efforts to improve outbreak detection and investigation methods.

U.S. federal agencies, state/county officials, foreign governments, law enforcement, health professionals, industry, or news media may issue an alert or notification. Alerts/notifications are related to problems with products that may pose a risk to the public. Information is shared within legal constraints, and information received from other organizations is used to improve analysis and respond to problems. U.S. agencies call upon the capabilities of their various stakeholder communities—regulators, public health partners, industry, and consumers—to generate effective solutions to complex food safety challenges. HHS/FDA and USDA rapidly coordinate responses to contain a problem and remove products from commerce to protect the public's health.

HHS/FDA's Emergency Operations Center (EOC) tracks food-borne outbreaks in the United States. If an HHS/FDA-regulated product is identified in a food-borne illness, EOC coordinates agency-wide responses, including sample collection and analysis, interpretation of disease-related data, and trace back of implicated products. HHS/FDA also has various educational efforts with State and local regulatory authorities promoting food-borne illness investigations. Well-trained personnel enhance surveillance, and FDA relies strongly on State and local authorities for quality surveillance information. HHS/FDA also has a Trilateral Agreement for product notifications with Canada and Mexico. In addition, HHS/FDA monitors various electronic and media sources, such as ProMed, which may provide signs of emerging issues. EOC conveys proper alerts through various mechanisms to respond effectively to these situations, as needed.

FSIS relies on a cadre of Public Health and Epidemiology Liaison officers located in regionally based offices (Atlanta and Omaha) who maintain active and open communications with State and Territorial health officials, and are USDA/FSIS' first point of contact for reports of illness that may be associated with meat, poultry or egg products. There is a 24-hour toll-free number for public health partners to call which routes the caller to the appropriate officer. Additionally, USDA/FSIS has a liaison officer assigned to the HHS/CDC, enabling USDA/FSIS to receive the earliest warning on food-borne illnesses that may involve regulated products.

HHS/FDA and FSIS officials receive alerts from HHS/CDC's Epi-X electronic alert system. Epi-X is a web-based communications system operated by HHS/CDC. Distribution of information through the Epi-X network is to promote rapid communications of recent outbreaks and other health events among local, state, and federal health officials. Epi-X carries reports of disease events outside, as well as inside, the United States. This dissemination of international health information promotes further surveillance of these conditions in the United States, as well as follow-up collaborations with foreign authorities dealing with these health events.

On an emergency basis, HHS/FDA maintains after hours phone contact numbers for all 50 States, and shares information through regularly scheduled conference calls with the States and ad-hoc calls. Additionally, HHS/FDA has the S.A.F.E.S (State Advisory FAX/Email system) communication system, which allows HHS/FDA to broadcast FAX and email information to all 50 states on demand. It is regularly used to disseminate information by the Agency. State agencies that may participate in calls or receive information include Departments of Health, Agriculture, Boards of Pharmacy, Environmental Health, Poison Control Centers, Fish and Wildlife, and State Veterinarians.

HHS/FDA's Office of International Programmes and FSIS's Office of International Affairs disseminate food safety information to foreign counterpart food regulatory authorities in other countries, as appropriate. For example, for a food product that is recalled because there is a reasonable probability that use of or exposure to the product will cause serious health consequences or death (referred to as Class I), and is exported, notification will be provided to the counterpart authorities.

The HHS Office of Global Health Affairs coordinates the U.S. work on the International Health Regulations (IHRs), which will include a set of internationally reportable diseases, including food-borne diseases. This involves a multi-agency effort that includes, not only HHS agencies, but also State, USTR, and USDA agencies. HHS/FDA has actively participated in this endeavour for a number of years by reviewing documents and providing comments as appropriate. More recently, FSIS and the USDA's Animal and Plant Health Inspection Service have also participated in the development of the IHRs.

The Electronic Laboratory Exchange Network (eLEXNET) is a seamless, integrated, web-based data exchange system for food testing information that allows multiple agencies engaged in food safety activities to compare, communicate, and coordinate findings of laboratory analyses. eLEXNET is funded by HHS/FDA and supported by USDA and the Department of Defence (DOD). It enables health officials to assess risks and analyze trends, and it provides the necessary infrastructure for an early-warning system that identifies potentially hazardous foods. At present, there are 108 laboratories representing 49 states that are part of the eLEXNET systems with 62 laboratories actively submitting data. We are continuing to increase the number of participating laboratories.

The National Antimicrobial Resistance Monitoring System (NARMS) is an example of a well-coordinated surveillance programme among HHS/FDA, HHS/CDC, and USDA. NARMS monitors antibiotic resistance of select food-borne pathogens isolated from clinical settings (both human and animal) and the antibiotic resistance of isolates from foods. The system was initiated in 1996 in response to public health concerns associated with the approval of fluoroquinolone products for use in poultry. NARMS monitors changes in susceptibilities to 17 antimicrobial drugs of zoonotic enteric pathogens from human and animal clinical specimens, from healthy farm animals, from carcasses of food-producing animals at slaughter, and from isolates from samples of retail foods. The system includes a veterinary arm, a human arm, and a retail food monitoring arm.

HHS/FDA operates two post-marketing surveillance systems, the FDA Consumer Complaint System and the CFSAN Adverse Event Surveillance System (CAERS). The Consumer Complaint System monitors complaints from consumers and industry related to HHS/FDA-regulated products already in distribution, and can capture if there is a reported illness, injury, or alleged tampering related to the product.

FSIS has a Consumer Complaint Monitoring System (CCMS) managed by nurses who receive and triage each complaint about USDA/FSIS-regulated products, coordinating the investigation of those complaints that allege illness or injury. The CCMS investigations have led to recognition of outbreaks, voluntary recalls of adulterated products, and changes to specifications of school lunch products. This system is currently undergoing an enhancement which will allow early recognition of complaint patterns that may indicate unusual or intentional events.

Finally, FSIS monitors the occurrence of food-borne pathogens through a variety of sampling and testing programmes developed as verification of a food-producing establishment's

Hazard Analysis and Critical Control Point/Pathogen Reduction plan. As such it is also a surveillance system, allowing FSIS to react to the presence of pathogens considered adulterants with the appropriate public health regulatory response, as well as to provide a rough estimate of the prevalence of specific pathogens on particular products.

Timely alerts via current notification processes are needed. Effective exchange of information is difficult when countries do not carry out the same methods and procedures or do not use the same set of standards. Many non-industrialized countries lack the resources to conduct meaningful surveillance, and even the countries that undertake surveillance may be using different methods and have different standards. These countries need trained staff in government, as well as adequately staffed and equipped laboratories and trained health care professionals, to identify and report diseases.

Establishing consistent laboratory methodologies, laboratory training, emergency preparedness training and procedures, database development, further assistance for developing countries, and strengthened communication networks are key strategies to advance the status of international food-borne disease surveillance. Identifying and exchanging specific contact information for specific products with other countries and developing agreements to cross-train with pertinent foreign officials would improve international information exchange. Some countries could also provide training, equipment, and technical support to international organizations, as well as to individual countries.

Surveillance of food-borne diseases should be given a high priority in the development of a food safety infrastructure. Building capacity for public health laboratories to conduct laboratory-based surveillance and to conduct epidemiologically-based surveillance are important global public health objectives. The needs of developing countries should be particularly considered. There is a need to be proactive in establishing one or more sentinel sites for food-borne disease in developing countries. There is also a need to develop and coordinate a global approach to strengthen surveillance at national, regional, and international levels.

Current surveillance is dependent upon physicians and clinical laboratories reporting illness and specific diagnosed infections. Thus, an improvement would be increasing the capacity of laboratories to identify specific pathogens and developing mechanisms to facilitate reporting of specific diseases. The ongoing support of interagency collaboration, international surveillance, and scientific research is crucial in preparing the international community to deal with food-borne disease in the global market place.

Food-borne disease surveillance within individual countries is important to track and to monitor domestic food-borne threats to public health. Existing national/regional systems such as that of the HHS/CDC, the European EnterNet, and that of the European Rapid Alert System for Food and Feed (see below) are examples of systems that may have applicability internationally. Collected information, including active and passive reporting from sub-jurisdictions (e.g., state and local public health officials), forms the basis of such systems and, when communicated to other countries, preferably though an international portal, is critical to global monitoring and surveillance. Within individual countries, the surveillance arm of government must coordinate with the regulatory arm of government to enforce food safety standards. These internal food safety networks support global surveillance, communication, and coordination. The current structure for international/regional food-borne disease surveillance includes both formal and informal relationships between and among countries. Formal programmes include Global Salm-Surv (a global network of laboratories and individuals involved in capacity building for surveillance, isolation, identification, and antimicrobial resistance testing of Salmonella) and the European Commission Health and Consumer Protection weekly reports from the Rapid Alert

System for Food and Feed (RASFF). One goal of RASFF is to provide individual control authorities with an effective tool for exchanging information on food safety measures. Yet, formal international food-borne disease surveillance communication is limited. Much of what is shared has been dependent upon relationships that people at various agencies developed over the years with colleagues in other countries. WHO's new INFOSAN initiative (see below) should enhance information sharing significantly.

Efforts are emerging to strengthen international food-borne disease surveillance. HHS/CDC works with other countries to assist in developing their version of FoodNet, such as OZFoodNet (Australia's programme). In addition, a meeting (co-chaired by HHS/CDC and WHO) at the last international Conference on Emerging Infectious Diseases focused on the global effort to develop better food-borne disease reporting. There is a more general WHO disease surveillance programme called Communicable Disease Surveillance and Response, a data mining software developed by the Canadians. A number of international links can also be found at www.foodsafety.gov or http://omni.ac.uk/browse/mesh/ C0012652L0012652.html. Another international electronic tool for food-borne disease information is ProMed, which reports on international health issues multiple times a day. Below are more details on some of the specific international collaborative efforts.

Strategies for Advancing International Cooperation of Foodborne Disease Surveillance

HHS/CDC International Collaborative Efforts

Collaborative efforts undertaken by HHS/CDC to foster international dissemination of food-borne infectious diseases information include:

1) Assisting foreign governments in investigation of large or unusual food-borne outbreaks when requested, providing reference laboratory consultations, and assisting in specific disease surveillance projects in other countries.
2) Participating as an active partner in WHO's Global Salm-Surv (GSS) programme. This includes the training courses. HHS/CDC personnel are involved with programme planning, training course development and microbiologic and epidemiologic training. It also includes consulting on GSS Focused National Projects on the Burden of the Food-borne Illness, and collaborating with GSS partners on Focused Regional Projects.
3) Facilitating the replication of the PulseNet molecular subtyping network internationally in Europe, the Asia Pacific region, and in Central and South America. This includes assisting with technical consultation and participation in training.
4) Extending a communication network for food-borne epidemiologists in the United States, to include Health Canada and the central hub of EnterNet (a cooperative arrangement among European countries).
5) Providing consultation and botulinum antitoxin for suspected cases of botulism to other western hemisphere countries through an agreement with the Pan American Health Organization (PAHO).
6) Reporting cases of cholera to WHO (through PAHO).
7) Establishing the Field Epidemiology Training Programmes (FETP), which assists foreign governments in establishing epidemiologic competence in disease surveillance and outbreak investigation and control and fosters international collaboration and communication among its trainees. At present , FETP is active in almost 20 countries.
8) Developing and disseminating the SafeWaterSystem, a point-of-use drinking water disinfections strategy that can be in homes, clinics, and places of food preparation to provide safe water for drinking, washing hands, and preparing food. (See www.cdc.gov/safewater for details.)

Examples of International/Regional Cooperation

Global Salm-Surv

Global Salm-Surv is part of WHO's effort to strengthen the capacities of its Member States in the surveillance and control of major food-borne diseases and to contribute to the global effort of containment of antimicrobial resistance in food-borne pathogens. Since 2000, institutions and individuals in human health, veterinary, and food-related disciplines have participated in Salm-Surv activities, such as regional trainings for microbiologists and epidemiologists, external quality assurance and reference testing, an electronic discussion group, and a web-based databank containing an annual summary of laboratories. Over the next five years, Global Salm-Surv plans to improve its regional coverage with new training courses in Central Asia, Eastern and Southern Africa, Brazil, and Europe, encourage participation in the External Quality Assurance System and in Focused Regional or National Projects, expand to other food-borne pathogens (Campylobacter), produce training manuals in microbiology and epidemiology, and establish regional centers. For more information see: http://www.who.int/salmsurv/en/.

PulseNet International

PulseNet is HHS/CDC's highly successful DNA "fingerprinting" network for detecting food-borne bacterial disease clusters and assisting in outbreak investigations in North America. Over the past 4 years, PulseNet USA has developed a close working relationship and partnership with Health Canada in the formation of PulseNet Canada. PulseNet Canada shares its data with PulseNet USA on a real-time basis. This has facilitated early interventions in food-borne outbreaks in terms of investigative procedures and public health prevention strategies, thus preventing additional illnesses and possibly saving lives. HHS/CDC is now in the process of facilitating the replication of the PulseNet concept internationally.

A consortium of European scientists headed by the Statens Serum Institut, Copenhagen, Denmark, is working towards the establishment of PulseNet Europe. A feasibility study of PulseNet Europe was completed for three food-borne pathogens (Shiga-toxin producing E. coli, Salmonella, and Listeria monocytogenes). The results of this study were presented and discussed at a workshop held in Paris, France on 16 June 2003. PulseNet Europe was successful in obtaining funding from the European Union for 2005.

HHS/CDC, in partnership with the U.S. Association of Public Health Laboratories (APHL), organized a meeting in Honolulu, HI on 12 and 13 December 2002 to explore the possibility of setting up a PulseNet-compatible network in the Asia Pacific region. Fourteen participants from public health laboratories in12 countries/areas in the region attended the meeting. Through interactive brainstorming sessions, the benefits and challenges of forming PulseNet Asia Pacific were discussed, an action plan for the establishment of the network was developed, and a Steering Committee for this network was formed at this meeting. After the Honolulu meeting, several individual countries/areas have worked within their framework to pursue the acquisition of PFGE capabilities. HHS/CDC facilitated the establishment of electronic communications among the participants to stimulate interaction and exchange of information between the participants. The Public Health Laboratory Centre, Hong Kong is coordinating the activities of PulseNet Asia Pacific in close collaboration with the National Institute of Infectious Diseases, Japan. Countries/areas participating in PulseNet Asia Pacific meetings include Australia, Bangladesh, China, Hong Kong, India, Japan, Korea, Malaysia, New Zealand, Philippines, Taiwan, Thailand and Vietnam. The first PulseNet training workshop for PulseNet Asia Pacific participants was held in Hong Kong, 15-17 March 2004. Several countries (Hong Kong, Japan, Korea, Taiwan and New Zealand) have already established PulseNet networks and are beginning to actively perform real-time subtyping of food-borne pathogenic bacteria. Issues related to funding for establishing and maintaining a central PulseNet database for the Asia Pacific network and for coordinating activities of the network are still to be addressed.

HHS/CDC, in partnership with the Pan American Health Organization (PAHO/INPPAZ), APHL and Instituto Nacional de Enfermedades Infecciosas ANLIS "Dr. Carlos G. Malbrán (Institute Malbrán), organized a meeting in Buenos Aires in December 2003 to explore interest in the region in establishing a PulseNet network. The participants expressed overwhelming support for the establishment of PulseNet America Latina. With high quality administrative support from PAHO/INPPAZ and technical support from Instituto Malbrán, the first PulseNet training workshop was held in Buenos Aires in July 2004. Public health microbiologists from six countries (Brazil, Chile, Colombia, Mexico, Uruguay, and Venezuela) were trained in the first workshop. INPPAZ will house the regional PulseNet database in its facilities in Argentina and provide administrative support and coordination for the network.

EC Rapid Alert System for Food and Feed (RASFF)

The European Community's RASFF was established to provide control authorities with an effective tool for exchange of information on measures taken to ensure food safety. The legal basis of the RASFF is Regulation (EC) N° 178/2002. Article 50 of this Regulation establishes the RASFF as a network involving the Member States (EU + EFTA/EEA), the Commission, and the European Food Safety Authority (EFSA). Whenever a member of the network has information relating to the existence of a serious direct or indirect risk to human health, this information is immediately notified to the Commission under the RASFF. The Commission immediately transmits this information to the members of the network. Without prejudice to other Community legislation, the Member States immediately notify the Commission under the rapid alert system of:

(a) any measure they adopt which is aimed at restricting the placing on the market or forcing the withdrawal from the market or the recall of food or feed in order to protect human health and requiring rapid action;
(b) any recommendation or agreement with professional operators which is aimed, on a voluntary or obligatory basis, at preventing, limiting or imposing specific conditions on the placing on the market or the eventual use of food or feed on account of a serious risk to human health requiring rapid action;
(c) any rejection, related to a direct or indirect risk to human health, of a batch, container or cargo of food or feed by a competent authority at a border post within the European Union.

To assist the members of the network, information is classified under two different headings, Alert Notification and Informational Notifications.

Alert Notifications—Alert notifications are sent when the food or feed presenting the risk is on the market and when immediate action is required. Alerts are triggered by the Member State that detects the problem and has initiated the relevant measures, such as withdrawal/recall. The notification aims at giving all the members of the network the information to verify whether the concerned product is on their market, so that they also can take the necessary measures. Consumers can be reassured that products subject to an alert notification have been withdrawn or are in the process of being withdrawn from the market. The Member States have their own mechanisms to carry out such actions, including the provision of detailed information through the media if necessary.

Informational Notifications—Informational notifications concern a food or feed for which a risk has been identified, but for which the other members of the network do not have to take immediate action, because the product has not reached their market. These notifications mostly concern food and feed consignments that have been tested and rejected at the external borders of the EU. Consumers can be reassured that products subject to an information notification have not reached the market or that all necessary measures have already been taken. The Commission publishes a weekly overview of alert and information notifications. As it is necessary to strike the balance between openness and the protection of commercial information, the trade names and the identity of individual companies are not published. This is not detrimental to consumer protection, as a RASFF notification implies that measures have been or are in the process of being taken.

Global Environmental Monitoring System (GEMS)

While not a food-borne disease surveillance programme, the Global Environment Monitoring System/Food Contamination Monitoring and Assessment Programme, commonly known as GEMS/Food, is an example of a successful, internationally coordinated surveillance effort. GEMS began as a joint project between FAO, the United Nations Environment Programme (UNEP), and WHO in 1976. WHO is the implementing agency for the contributing institutions (located in over 70 countries around the world). GEMS' purpose is to compile data on food contamination and human exposure from different countries for global synthesis, evaluation, and presentation. In 1996, GEMS began developing a new data structure and protocols for the electronic data submission. The protocols involve encoding and formatting data in a manner compatible with the database maintained at WHO headquarters. Protocols for aggregate and individual data on contaminant levels in specific food commodities include descriptions of the data fields needed to ensure complete, quality electronic data submissions. Data may be submitted to GEMS/Food using the compatible Operating Programmes for Analytical Laboratories (OPAL I and II), copies of which can be requested from the GEMS/Food Manager. GEMS data are accessible at the WHO website. Uniform implementation and wide accessibility of the GEMS system make it a model for expanded, international food surveillance efforts.

INFOSAN

WHO is in the process of establishing an official International food Safety Authorities Network (INFOSAN) for rapid distribution of specific information concerning food safety. INFOSAN has two major components: 1) INFOSAN Emergency for food safety emergency situations when imminent risk of serious injury or death is present, and 2) an information network for the dissemination of important information about global food safety issues. WHO is in the process of collecting contact point from countries and preparing a handbook for use by the INFOSAN emergency contact points.

Conclusion

While there are no all-encompassing international surveillance systems, examples that serve to illustrate the value of such systems have been illustrated. The structure, function, and interactions between each country's government agencies form the start of an eventually global surveillance, regulatory, and protective framework to curtail the transmission of food-borne diseases. Ultimately, WHO, as the lead international public health organization, could be the focal point of such a global surveillance framework. WHO and FAO, through their collective food safety capability, including the WHO Food Safety Department and the FAO Food Standards Programme, could, with the provision of adequate financial and staffing resources, provide the organizational and scientific capability to support a global food-borne disease surveillance system.

Points of Discussion

The Forum may wish to consider the following points regarding international cooperation on food contamination and food-borne disease surveillance.

- This Paper provides examples of certain national and regional food-borne disease surveillance programmes and international activities associated with their programmes. Are there other major programmes and international activities that should be brought forward?
- The Paper presents certain strategies for advancing international cooperation of food-borne disease surveillance, e.g., more consistent laboratory methodologies, laboratory training, database development). Are elements missing from these strategies? Are there priorities? What strategies should be pursued to better enable international cooperation on food-borne disease surveillance?
- Given the significant resource (trained personnel, laboratory, and database management) requirements for food-borne disease surveillance, what is the best course of action to follow to enhance developing country capability in this area?
- WHO plays a leading international role in food-borne disease surveillance. How best can their role be enhanced in this area?

Agenda Item 5.3 GF 02/12

SECOND FAO/WHO GLOBAL FORUM OF FOOD SAFETY REGULATORS
Bangkok, Thailand, 12-14 October 2004

EMERGING RISKS RELATED TO THE ENVIRONMENT AND NEW TECHNOLOGIES
(Prepared by the FAO/WHO Secretariat)

1. Environmental risks related to conventional agriculture

Farming and nature exercise a profound influence over each other. Farming has contributed over the centuries to creating and maintaining a variety of valuable semi-natural habitats. They shaped an important part of landscapes worldwide and are home to many of the world's richest wildlife. Farming also supports a diverse rural community that is not only a fundamental asset of international culture, but also plays an essential role in maintaining the environment in a healthy state.

Farming is an activity whose significance goes beyond simple food production. Throughout the production chain processes occur that can have an impact on the natural environment and consequently, directly or indirectly, on human health and development. For example, heavy use of pesticides and fertilizers, incorrect drainage or irrigation practices, a high level of mechanization or unsuitable land use can produce environmental degradation. However, abandonment of farming activities can also endanger the environmental heritage through loss of semi-natural habitats as well as biodiversity and landscape associated with them. Likewise, the effect of agricultural production systems on human health directly (farmer's occupational health) or indirectly (consumer's health through food) are increasingly being recognized as an integrated element in the broader evaluation of environmental risks related to agriculture.

The links between the richness of the natural environment and farming practices are complex. While many valuable habitats are maintained by extensive farming, and a wide range of wild species rely on this for their survival, agricultural loss of wildlife can be the result of inappropriate agricultural practices and land use.

Discussions on possible future environmental effects of new technologies in food production will necessarily have to take outset in the present situation of agricultural effects on the environment, including derived effects on human health, recognizing that present trends of conventional agriculture are likely to be reflected in the objectives of modern food production.

1.1 Key aspects of environmental pollution and resource depletion[1]

Agriculture adds to greenhouse gas (GHG) problems. There are three main sources of GHG emissions from agriculture: N2O (nitrous oxide) emissions from soils, mainly due to nitrogen fertilization; CH4 (methane) emissions from intestinal fermentation, CH4 and N2O emissions from manure management. Measures being considered include: encouragement of more efficient fertilizer applications to reduce overall use, composting and improvements in anaerobic digestion systems (e.g., for production of biogas), to deal with biodegradable by-products and waste; renewed emphasis on biomass production, conservation tillage and organic farming.

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[1] EC, Agriculture and the Environment, 2003

Further development of renewable, agricultural biomass could contribute to reductions in emissions from energy and transport, while benefiting the agricultural sector.

Water pollution by nitrates from agricultural sources, where improved agricultural practices are thought to improve pollution.

Pesticides have been proven to have an effect on the environment and ecosystems by reducing biodiversity, especially by reducing weeds and insects which are often important elements of the food chain e.g. for birds. In addition, human health can be negatively affected through direct exposure and indirect exposure, e.g. via their residues in agricultural produce and drinking water. Systems to reduce the need for pesticide use, especially integrated pest management, organic farming or in some cases genetically modified crops are increasingly investigated at national and international level.[2]

Soil degradation processes such as desertification, erosion, decline in soil organic matter, soil contamination (e.g. by heavy metals), soil sealing, soil compaction, decline in soil biodiversity and salinization can cause soil to lose its capacity to carry out its main functions. Such degradation processes can result from inappropriate farming practices such as unbalanced fertilization, over abstraction of groundwater for irrigation, improper use of pesticides, use of heavy machinery, or overgrazing. Measures to prevent soil degradation include support to organic farming, conservation tillage, the protection and maintenance of terraces, safer pesticide use, integrated crop management, management of low-intensity pasture systems, lowering stock density and the use of certified compost.

Irrigation can also lead to environmental concerns, such as over-extraction of water from subterranean aquifers, irrigation driven erosion, soil salinization, alteration of pre-existing semi-natural habitats and, secondary impacts arising from the intensification of the agricultural production permitted by irrigation.

Bio diversity conservation: In recent decades, the rate of decline and even disappearance of species and related habitats, ecosystems and genes (i.e. biodiversity) has increased throughout the world. Declines in biodiversity are of direct consequence for food security when they affect food related organisms and relatives with relevance for breeding. Furthermore, intensified agriculture including modern breeding systems has resulted in significant reductions of landraces, adapted to local specificities as well as traditional knowledge.

Assessment of agricultural impacts on the environment requires the use of holistic models which are able to integrate multiple sources of information.[3]. Previous scientific discussions have concluded that solutions applied at farm level contributed environmental problems but they are not adequate to the task of realizing long-term environmental goals. This requires system innovations at higher levels of aggregation, involving, for example, looking for opportunities to negotiate recycling systems by linking sectors within agriculture and other areas affecting the environment, e.g. transport systems.[4]

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[2] EC, Agriculture and the environment, 2003

[3] Levitan, L., Merwin, I. and Kovach, J., 1995. Assessing the relative environmental impacts of agricultural pesticides: the quest for a holistic method. *Agriculture, Ecosystems and Environment*. 55 (1995).p 153-158

[4] *National Council for Agricultural Research, The Netherlands,* http://www.agro.nl/nrlo/english/pdf/9804e.pdf

As a consequence of public discussion, new concepts for policies of agriculture and environment interactions have been developed in many countries including an improved public monitoring and responsibility for sustainability.[5] [6]

The Millennium Ecosystem Assessment (MA), launched by U.N. Secretary-General Kofi Annan in June 2001, is an international work programme designed to meet the needs of decision makers and the public for scientific information concerning the consequences of ecosystem change for human well-being and options for responding to those changes. The MA focuses on ecosystem services (the benefits people obtain from ecosystems), how changes in ecosystem services have affected human well-being, how ecosystem changes may affect people in future decades, and response options that might be adopted at local, national, or global scales to improve ecosystem management and thereby contribute to human well-being and poverty alleviation.[7]

Work on agro-environmental indicators provided information on the current state and changes in the conditions of the environment in agriculture. It also resulted in a better understanding of linkages between the causes and impacts of agriculture on the environment, looking at agricultural policy reform, trade liberalization and environmental measures. This all contributes to monitoring and evaluating the effectiveness of policies addressing agri-environmental concerns.[8] A review of empirical work in OECD countries on effects of agricultural policies and practices on the environment is given by OECD.[9] Work on environmental health indicators suggests that various agricultural practices have direct or indirect effects on human health via environmental effects. Hazards can take many forms, wholly natural in origin or derived from human activities and interventions.[10]

1.2 Approaches for environmental protection and values to be protected

In 1992 the Convention on Biological Diversity (CBD, ratified by 188 countries) defined a legally binding instrument for biodiversity protection and sustainable use of biological resources.[11] According to the CBD, biodiversity means "the variability among living organisms from all sources including, *inter alia*, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part" (CBD, 1992 [12]). The goal of the Convention on Biological Diversity is "the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefit arising out of the utilization of genetic resources." The treaty recognized the great value of genetic and biological diversity.

Biological diversity is closely linked to human interests. Biodiversity is highly important for several quite different reasons: the value of species in the wild, the many varieties of plants, animals and microorganisms used for farming and other human activities worldwide, as a genetic resource in healthcare, agriculture and food production. It provides a source of significant economic, aesthetic and cultural benefits. The well-being and prosperity of earth's ecological balance as well as human society depend directly on the extent and status of biological diversity.[13]

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[5] Ervin et al., Environment 1998.
http://www.findarticles.com/p/articles/mi_m1076/is_n6_v40/ai_20979662

[6] Baldock et al., environmental integration and the CAP, a report of the E.C.

[7] http://www.millenniumassessment.org/en/about.overview.aspx

[8] OECD Agro- Environmental indicators,
http://www.oecd.org/document/6/0,2340,en_2649_33791_1842886_1_1_1_1,00.html

[9] OECD 2002, COM/AGR/CA/ENV/EPOC(2001)60/FINAL

[10] von Schirnding YE. Health-and-environment indicators in the context of sustainable development. World Health OrganizationCan J Public Health. 2002 Sep-Oct; 93 Suppl 1: S9-15

[11] http://www.biodiv.org/world/parties.asp

[12] www.biodiv.org/convention/articles.asp

Naturalism and nature protection: Some difficulties for environmental protection derive from different interpretations and understanding of the idea of nature. Especially in the consumer's debate on the creation of genetically modified organisms, the idea of the need to protect nature was often not well defined, mainly because of differences in the understanding of the concept of nature, ranging between concepts of wilderness, human environment, flexibility of natural systems[14] and ideas of naturalism.[15] Ethicists try to improve this situation by using clear definitions, whichever school they might come from (Nuffield report).[16]

Levels of protection may vary as goals range from sustaining ecosystem services to fully preserving endangered species or fragile protected areas. Biotic homogenization that decreases regional biotas and functional diversity would reduce resilience by reducing the available range of species-specific responses to such environmental changes as droughts, contaminants, or invasive species.[17] Therefore, different criteria for protection will be needed for different management goals and socio- ecological contexts. The links between environmental protection and human health through the control of direct and indirect health effects of environmental deterioration needs to be factored into these equations, notably with food safety as one of the direct indicators.

2. Emerging new technologies in food production

Following adoption of hybrid breeding technologies further breeding objectives included methods for the introduction of increased genetic variability using several methods for **mutagenesis** such as chemical mutagenesis or irradiation as well as various ways of tissue cultures. The further development resulted in the presently most advanced methods of modern biotechnologies, the production of organism by **genetic modification** using introduction of defined new or recombinant genetic material by vectors and transformation methods. These organisms are typically named Genetically Modified organisms or GM organisms. Improved methodology for the development of GM organisms (GMOs) by homologous recombination may ultimately reduce the potential for unintended effects, including health effects, of the inclusion of new genes randomly in the genome, stemming from present technology. Likewise improved methods for a molecular containment of recombinant genes may reduce problems of unintended gene dispersal.

Conflicting assessments and incomplete substantiation of the benefits, risks and limitations of GM food by various scientific, commercial, consumer and public organizations have resulted in national and international controversy regarding their safe use as food and safe release into the environment. An example is the recent debate on food aid that contained GM material offered to countries in southern Africa in 2002. This international debate has often been focused on human health and environmental safety of these new products.

At present, only a few food crops are permitted for food use and traded on the international food and feed markets. These include herbicide- and insect-resistant maize (*Bt* maize), herbicide-resistant soybeans, rape (canola) oilseed and insect- and herbicide-resistant cotton (primarily a fibre crop, though refined cottonseed oil is used as food). In addition, several

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[13] EFB: Biodiversity: The impact of Biotechnology, briefing paper 2001

[14] http://www.nature.com/nature/journal/v405/n6783/pdf/405228.pdf

[15] http://debate.uvm.edu/NFL/rostrumlib/policy200305bauschard.pdf

[16] http://www.nuffieldbioethics.org/go/browseablepublications/gmcrops/report_238.htr

[17] Olden, J.D. and al., 2004. Ecological and evolutionary consequences of biotic homogenization. Trends in Ecology and Evolution 19:18-24.

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government authorities have approved varieties of papaya, potato, rice, squash, sugar beet and tomato for food use and environmental release. Further development of GM crops is likely to produce a range of GM crops with enhanced nutritional profiles[18]. Various novel traits are currently being tested in laboratories and field tests in a number of countries, but are unlikely to enter the market for several years. A significant proportion of these traits relates directly to human health, the beta-carotene (Vitamin-A precursor) rich "golden rice" as the most well-known example. Other examples with health implications are removing allergens and anti-nutrients, altering fatty-acid profiles and increasing the anti-oxidant content. All new products related to such potential health benefits will naturally need to be scrutinized through thorough environmental and food safety risk assessments.

An analysis of risks and effects of food production practices using modern methods of biotechnology needs to reflect on all developments in the area, based on knowledge of modern biology and keeping in mind that the definition of modern biotechnology is often not very standardized.

Integrated pest management (IPM) needs to be seen in the light of modern biotechnology because of the use of advanced bio-technological methods: Definitions of IPM cover a range of approaches: from safe use of pesticides, to elimination of virtually all pesticide use. Suitable pest control methods should be used in an integrated manner and pesticides should be used on an "as needed basis" only, and as a last resort component of an IPM strategy. In such a strategy, the effects of pesticides on human health, the environment, sustainability of the agricultural system and the economy should be carefully considered. According to FAO, IPM programmes are designed to generate independence and increased profits for farmers, and savings on foreign imports for governments. IPM enables farmers to make informed decisions to manage their crops. [19]

Sometimes also **organic farming** is discussed as a modern technology for food production, where farmers adhering to this idea are aiming for similar objectives like IPM but more clearly pronounce the ideas of integrity, self determination and co evolution.[20] Although organic farming will inherently affect the use of agricultural chemicals, the safety considerations related to food derived from these practices do not only contribute positively in the broader health equation.

2.1 Environmental risks related to food production using GM technologies

Principles of the environmental risk assessment, ERA: In many national regulations the elements of the ERA for GM food organisms include the biological and molecular characterizations of the genetic insert, the nature and environmental context of the recipient organism, the significance of new traits of the GMO for the environment, and information on the geographical and ecological characteristics of the environment in which the introduction will take place. The risk assessment focuses especially on potential consequences on the stability and diversity of ecosystems, including putative invasiveness, vertical or horizontal gene flow, other ecological impacts, effects on biodiversity and the impact of presence of GM material in other products. [21]

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[18] The Pew Initiative on Food and Biotechnology, 'Harvest on the horizon: Future uses of agricultural biotechnology', September 2001: http://pewagbiotech.org/research/harvest/harvest.pdf

[19] FAO, integrated pest management : http://www.fao.org/ag/AGP/AGPP/IPM/gipmf/index.htm

[20] Organic: is it the future of farming? Nature, 2004: 428; http://www.nature.com/cgi-taf/DynaPage.taf?file=/nature/journal/v428/n6985/full/428792a_fs.html

Internationally the concept of familiarity was developed also in the concept of environmental safety of transgenic plants. The concept facilitates risk/safety assessments, because to be familiar, means having enough information to be able to make a judgment of safety or risk (U.S. NAS, 1989). Familiarity can also be used to indicate appropriate management practices including whether standard agricultural practices are adequate or whether other management practices are needed to manage the risk (OECD, 1993). Work of international organizations on biosafety in summarized chronologically by ICGEP. [22]

Currently the Cartagena Protocol on Biosafety to the Convention on Biological Diversity is the only international regulatory instrument which deals specifically with the potential adverse effects of genetically modified organisms (known as Living Modified Organisms (LMOs) under the Protocol) on the environment. The Biosafety Protocol covers transboundary movements of any genetically modified foods that meet the definition of LMO. Annex III of the Protocol specifies general principles and methodology for risk assessment of LMOs. The Protocol establishes a harmonized set of international rules and procedures designed to ensure that countries are provided with the relevant information, through the information exchange system called "Biosafety Clearing-House". This Internet-based information system enables countries to make informed decisions before agreeing to the import of LMOs. It also ensures that LMO shipments are accompanied by appropriate identification documentation. While the Protocol is the key basis for international regulation of LMOs, it does not deal specifically with GM foods and its scope does not consider GM foods that don't meet the definition of an LMO. Furthermore, the scope of its consideration of human health issues is limited, given that its primary focus is biodiversity, in line with the scope of the Convention itself.

Potential unintended effects of GMOs on non target organisms, ecosystems and Biodiversity: Potential risks for the environment include unintended effects on non target organisms, ecosystems and biodiversity. Insect resistant GM crops have been developed by expression of a variety of insecticidal toxins from the bacterium *Bacillus thuringiensis* (Bt). Detrimental effect on beneficial insects or a faster induction of resistant insects (depending on the specific characteristics of the Bt proteins, expression in pollen and areas of cultivation) have been considered in the environmental risk assessment (ERA) of a number of insect protected GM crops. These questions are considered an issue for monitoring strategies and improved pest resistance management, which inherently can affect food safety in the longer term. WHO/ANPA, 2000[23] increased doses of herbicide can be applied post emergence to herbicide tolerant crops, thus avoiding routine pre-emergence applications and reducing the number of herbicide applications needed. Under certain agro-ecological situations, such as a high weed pressure, the use of herbicide tolerant crops has resulted in a reduction in quantity of the herbicides used, in other cases no herbicide reductions or even the need of increased herbicide uses have been reported [24].

Out-crossing: Out-crossing of transgenes has been reported from fields of commercially grown GM plants including oilseed rape and sugar beet, and has been demonstrated in experimental releases for a number of crops including rice and maize. Out-crossing could result in

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[21] Anthony J. Conner, Travis R. Glare, Jan-Peter Nap. The release of genetically modified crops into the environment. Part II. Overview of ecological risk assessment. The Plant Journal (2003) 33, 19–46

[22] http://www.icgeb.org/~bsafesrv/bsflib.htm

[23] WHO, ANPA, 2000 http://www.euro.who.int/foodsafety/Otherissues/20020402_5

[24] 9 Duke SO. Weed Management: Implications of Herbicide Resistant Crops . 2001.

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an undesired transfer of genes such as herbicide resistance genes to non-target crops or weeds creating new weed management problems. The consequences of out-crossing can be expected in regions where a GM crop has a sympatric distribution and synchronized flowering period, that is highly compatible with a weedy or wild relative species as demonstrated e.g. for rice[25]. In view of the possible consequences of gene flow from GMOs the use of molecular techniques to inhibit gene flow has been considered and is under development.

GM animals: The possibility that certain genetically engineered fish and other animals may escape, reproduce in the natural environment and introduce recombinant genes into wild populations is a concern of a report of a recent US Academy of Science study[26]. Genetically engineered insects, shellfish, fish and other animals that can easily escape, are highly mobile and form feral populations easily, are of concern, especially if they are more successful at reproduction than their natural counterparts. For example, it is possible that transgenic salmon with genes engineered to accelerate growth released into the natural environment could compete more successfully for food and mates than wild salmon, thus endangering wild populations. The use of sterile all-female genetically engineered fish could reduce interbreeding between native populations and farmed populations, a current problem with the use of non-engineered fish in ocean net-pen farming. Sterility eliminates the potential for spread of transgenes in the environment, but does not eliminate all potential for ecological harm. Monosex triploidy is the best existing method for sterilizing fish and shellfish, although robust triploidy verification procedures are essential.[27]

GM microorganisms: Gene transfer between bacteria belonging to different species, genera or even families has been demonstrated in soil and other systems. Such gene transfer goes on between ordinary microorganisms in all ecosystems, and has also been demonstrated from GM microorganisms to other microorganisms, e.g. for antibiotic resistance genes. The transfer of antibiotic genes to microorganisms present in foods and of clinical importance is an unwanted event relative to food safety, while the very low frequency of such transfer most probably leads to very low levels of concern. Only a limited number of releases of GM microorganisms (e.g. *Pseudomonas* and *Rhizobia*) have been permitted mainly to explore the spread and the fate of microorganisms in nature. In some cases released GM bacterial populations have been found to persist in the soil for years. The possible consequences of such on natural communities of soil microorganisms are under investigation Risk assessment in such fields is impeded by a number of factors, such as the limited knowledge of indigenous microorganisms in the environment (only approximately 1% of soil bacteria are currently taxonomically described), the existence of natural transfer mechanisms between microorganisms, and the difficulties in controlling their spread. (FAO/WHO Expert Consultation, GMM, 2001)[28]

Regional specificity in safety assessments: Contradictory findings as relates benefits or disadvantages for the same GM crop may reflect different agro-ecological conditions in different regions. For example, the use of herbicide resistant crops and the consequent herbicide use could potentially be detrimental in a small sized agricultural area, which has extensive crop rotation and low levels of pest pressure. However, the moderate herbicide use related to these GM plants could be beneficial in other agricultural situations where it might represent a decrease in herbicide use. Presently, no conclusive evidence on environmental advantages or costs can be generalized from the use of GM crops. Consequences may vary significantly between different GM traits, crop types and different local conditions including ecological and agro-ecological characteristics.

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[25] LI JUAN CHEN and BAO-RONG LU*,3 Gene Flow from Cultivated Rice (Oryza sativa) to its Weedy and Wild Relatives *Annals of Botany* 93: 67-73, 2004

[26] National Academy, Animal Biotechnology: Science based concerns, 2002; The Royal Society, 2000. http://www.nap.edu/catalog/10418.html?onpi_topnews082002

[27] WHO/FAO Expert Consultation, GM Animals, 2003

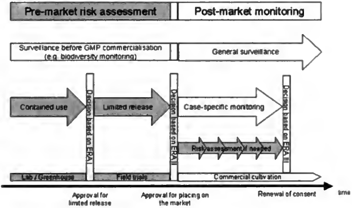
[28] http://www.who.int/foodsafety/publications/biotech/ec_sept2001/en/

In 1999, the UK government asked an independent consortium of researchers to investigate how growing genetically modified (GM) crops might affect the abundance and diversity of farmland wildlife compared with growing conventional varieties of the same crops.[29] The team found that there *were* differences in the abundance of wildlife between GM crop fields and conventional crop fields depending from GM crop specificity and site of analysis, but no general trend for or against GM crops. The researchers stress that the differences they found do not arise just because the crops have been genetically modified. They arise because these GM crops give farmers new options for weed control where they use different herbicides and apply them differently.

Monitoring of human health and environmental safety: In the future specific GM organisms may gain approvals for widespread production where the approval may not always include the possibility to enter them also in the human food supply. Examples could be plants or animals used for drug production. In such situations, it will be important to consider whether or not to apply post-market monitoring for unexpected environmental spread of the GM animals or animals and their transgenes in the event that these would pose food safety hazards.

A prerequisite for any kind of monitoring are tools to identity or trace GMOs or products derived from GMOs in the environment or food-chain. Detection techniques (such as PCR) are in place in a number of countries to monitor the presence of GMOs in foodstuffs, to enable the enforcement of GM labelling requirements and for the monitoring of effects on the environment. Attempts to standardize analytical methods for tracing GMOs have been initiated e.g. for use in ISO norms.

The WHO/FAO Expert Consultation on GM Animals, 2003, identified a need for Post Market Surveillance and therefore for product tracing systems in specific cases.



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[29] UK, Acre; www.defra.gov.uk/environment/gm/fse/results/fse-summary.pdf

2.3 Potential effect of GMOs on human health mediated through environmental impact

The need to assess indirect effects of the use of GMOs in food production has been emphasized by many countries. Potential environmental health hazards of releases of GMOs in the environment have been discussed in a report by WHO/ANPA where health effects have been suggested as "an integrating index of ecological and social sustainability"[30]. For example, the production of chemicals or enzymes from contained GM micro-organisms (e.g. chemicals, pharmaceutics or food additives), have contributed significantly to decreases in the amount of energy use, toxic and solid wastes in the environment, thereby significantly enhancing human health and development. A further example of beneficial human environmental outcomes of the use of GM crops is the reduction in the use, environmental contamination and human exposure to pesticides demonstrated in some areas. This has been demonstrated especially through the use of pesticide resistant Bt cotton, which has been shown to decrease pesticide poisoning in farm workers[31]. Out-crossing of GM plants with conventional crops or wild relatives, as well as the contamination of conventional crops with GM material, can have an indirect effect on food safety and food security by contamination of genetic resources.[32] The Codex guidelines for the safety assessment of GM foods include the analysis of potential unintended effects, where effects on the environment may result in unintended, indirect effects on human health.[33]

2.4 Modern methods in plant breeding and effects on diversity

Crop breeding strategies are highly dependent upon preservation of diversity of crops and wild relatives. Many methods of conventional and modern biotechnology can interfere with diversity of organisms which have relevance for further breeding. In crops these methods can often concentrate on the further improvement of few elite lines only. The majority of locally adapted land races e.g. will not be propagated further. Also the system for the protection of intellectual property rights interferes with crop diversity. There is growing scientific and public concern about a rapid decline of diversity, e.g. of land races. On the other hand modern methods of biotechnology can be beneficial for enabling diversity in scenarios where possibilities of conventional breeding are difficult because of sterility and pests, e.g. as discussed for bananas. [34]

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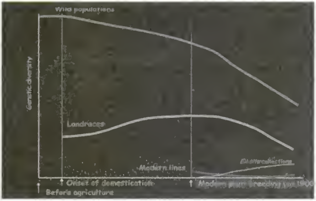
[30] World Health Organization/National Agency for the Protection of the Environment. Release of Genetically Modified Organisms in the Environment: Is it a Health Hazard? Report of Joint WHO/EURO-ANPA Seminar
(WHO, Rome, Italy) http://www.euro.who.int/document/fos/Fin_rep.pdf (7-9 September 2000).

[31] Prey CE, Huang J, Hu R, and Rozelle S. 2002. Five years of BT cotton in China- the benefits continue. *Plant J.31* 31:423-430.

[32] Alvarez-Morales, A. Transgenes in maize landraces in Oaxaca: official report on the extent and implications. Presented at the 7th International Symposium on the Biosafety of Genetically Modified Organisms. http:// www.worldbiosafety.net/paper

[33] Haslberger A., 2003 Nature Biotechnology, 21:739, http://www.alexander-haslberger.at/pdf/CODEX,%20NB.pdf

[34] http://cooltech.iafrica.com/technews/201934.htm



Historically, plant genetic resources were freely provided by developing countries to gene-banks world-wide. Now international policy attaches importance to national ownership of such resources. An important aspect for the future potential of agricultural research is access to genetic resources for researchers on terms that recognize the contributions made by farmers to the conservation and sustainable utilization of these resources.

The International Treaty on Plant Genetic Resources adopted at a conference by the Food and Agriculture Organization in November 2001, provides the legal framework for dealing with the resources on which food security and sustainable agriculture depend. The Treaty gives a directive on the conservation and sustainable use of plant genetic resources for food and agriculture making provision for the fair and equitable sharing of the benefits arising out of their use, in harmony with the United Nations Convention on Biological Diversity (CBD). The Treaty also addresses farmers' rights.

The Treaty establishes a Multilateral System of Facilitated Access and Benefit-sharing (MLS) for key crops, emphasizing the interdependency of countries in terms of plant genetic resources for food and agriculture. The developing countries rich in genetic resources are encouraged to place germplasm in the MLS. The users of the material will sign a Material Transfer Agreement, incorporating the conditions for access and benefit sharing through a fund established under the Treaty. In return, the owners of the genetic resources would get a share of the benefits arising from their use and development in the way of information, technology transfer and capacity building

3. Interaction between environmental risks, food risks and socioeconomic aspects

The U.S. Agency for International Development reported that between 1975 and the year 2000 the world lost 22 percent of its high-potential agricultural land. That's 600,000 square miles, an area equal in size to Alaska. The loss is alarming because, as population pressures mount, agricultural production will have to expand onto medium- and low-potential lands that are not only less productive but also more fragile and susceptible to degradation. Soil is degraded mainly through deforestation, agricultural activities, overgrazing, and overexploitation. Biophysical manifestations include erosion and loss of moisture-holding capacity. But more important, and more complex, are the social and economic aspects. Indeed, some view land degradation as a socioeconomic rather than biophysical problem. For example, population growth increases demand for land on which to grow crops, which often leads to deforestation, shorter fallow

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periods, and continuous cropping. Short-sighted economic policies often make the problem worse by encouraging farmers to clear new land for cultivation rather than to protect land already under cultivation. Insecure land tenure arrangements discourage farmers from making long-term investments needed for resource conservation.[35]

The Impacts of trade liberalization: The implementation or reform of agricultural and trade policy creates a complicated set of environmental effects - some negative, some positive, and in some cases linked to food safety issues. The effect of freer agricultural trade on environmental quality depends on a number of factors, such as the mix of post-reform commodities, level of output, changes in production inputs, land use, technical change, and the capacity of the natural resource base to assimilate production impacts. The additional effect of such changes related to food safety will in many cases relate to the existence of food safety systems and experience related to the new or increase food commodity production.

Freer trade improves market access for goods previously governed by quantity restrictions (such as quotas and other non-tariff barriers) and aligns domestic prices closer to world prices. Resource reallocation occurs as prices adjust to market conditions and reflect the availability of resources such as arable land, labour, and other farming inputs. As prices change, farmers respond by altering their crop mix and their input use, buying or selling land, and investing in new machinery. In countries where reform leads to an increase in producer prices, farmers will respond by increasing output, placing more pressure on land use, and/or increasing chemical input uses.[36]

In addition, trade and health considerations are intimately connected. The use of international standards for traded food, focusing on food safety, but in the future also most likely on environmental issues, will have the potential to improve not only internationally traded food but also local food, and thereby the health of local consumers. This in turn would then favour both health and social and economic development - a true win-win situation. The cooperation between international agencies to focus development in these areas is exemplified by the creation of the STDF (Standards in Trade and Development Facility)[37] in a joint effort between WHO, FAO, World Trade Organization, World Animal Health Organization and World Bank. This Facility will hopefully provide the means for developing countries to strengthen their systems to comply with international standards to the benefit of both exported and locally consumed food.

4. Ethical aspects in the assessment of environmental risks

International agreements related to nature and food production are summarized in a report from FAO on ethical issues in food and agriculture. They include the value of food, the value of enhanced well-being, the value of human health, the value of natural resources, and the value of nature, whereas the Convention on Biological Diversity recognizes that nature itself is to be valued for what it is. The summary of these objectives shows that all principle arguments usually discussed in a risk benefit evaluation of food biotechnology, especially enhanced productivity for increased food production, equity, health and nature protection, interfere with each other, thus requiring a high level of ethical consideration.[38,39]

There is international agreement that risk assessment, risk management and risk communication are central elements in the management of possibly emerging risks of new technologies for food production where risk assessment needs to be done based on "sound science". But discussions on the use of precaution (by some countries referred to as the precautionary principle) and the need to respect legitimate factors other than the scientific assessment of risk have turned out to be controversial[40].

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[35] USAID Programme and Operations, Assessment Report No. 18

[36] USDA, Agricultural outlook, Dec. 1996

[37] http://www.standardsfacility.org/techdb.htm

[38] FAO, http://www.fao.org/DOCREP/003/X9601E/X9601E00.htm

[39] Center for agriculture, bio- and environmental ethics, http://www.kuleuven.ac.be/cabme/index.php?LAN=E

Scientific progress on these issues was made in the FAO Expert Consultation on Food Safety: Science and Ethics Rome, 2002: The experts agreed that risk assessment is based on science, but scientific evidence and analysis cannot always provide immediate answers to questions posed. Much scientific evidence is tentative, as the established processes of science include checking and re checking outcomes in order to obtain the required level of confidence. Decisions usually are defended as based on "science," and sometimes on economic costs and benefits as well, which offer seemingly objective, verifiable evidence that the policy choice is "correct." Decisions explicitly based on ethical principles and value preferences can be just as defensible, if the society agrees broadly on the ethical assumptions used to make policy. The emphasis on science and the exclusion of ethical argument as the basis for decisions may polarize the scientific debate.

A cross sectoral group of scientists, NGOs and industry formulated the safety first approach asking for interactive negotiation between research, industry, government and consumers to formulate safety standards. These standards would make safety a criterion in discussions on developments from the beginning and not at the end before product notification and include post market monitoring, training and stewardship.[41]

The dependence of factors directly relevant for the risk assessment of products of new technologies with socio-economic or ethical factors will be addressed in attempts of an integrated/holistic assessment of possible consequences in an ongoing WHO project.[42] In the FAO/WHO Expert Consultation on GM Animals, Rome 2003, furthermore, an analysis including ethical criteria was proposed using an ethical matrix[43] and recently the principles of beneficence and non-maleficience, justice and fairness as well as choice and self determination were proposed for a structured methodological evaluation.[44]

5. The role of international organizations, capacity building and coordination

Products produced with different methods of modern biotechnology are already produced for local or international markets. Crops, animals or microorganism have been improved according to agricultural objectives where these organisms may display specific characteristics in regard to safety or usefulness in different agro- ecological, socio-economic or cultural areas. A globalized market for food production will most likely trade products of these organisms internationally and the safety measures of the Biosafety Protocol will be of importance in risk prevention. However, possibilities of the protocol are restricted to transboundary movements of LMOs and direct effects on diversity. Furthermore, sufficient technical capacities for coherent analysis may be difficult to achieve in many developing countries and the need for coordinated local as well as international information exchange on complex parameters will require sophisticated technical and scientific capacities. The capacity of the Codex Alimentarius Commission to continue its work on internationally agreed principles and guidelines for a food safety risk analysis framework will be key to a truly global development in this area of integrating the different areas of assessment of new agricultural technologies and ensuring that human health considerations will remain at the core. This will ultimately need measures for capacity building in some countries as well as the intensive engagement of international bodies in coordinated monitoring activities, data collection and data analysis. An engaged cooperation of international organizations, especially UN-bodies will be essential for a successful and equitable development in this direction.

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[40] http://www.consumersinternational.org/document_store/Doc604.pdf

[41] Kapuscinski AR, Goodman RM, Hann SD, Jacobs LR, Pullins EE, Johnson CS, Kinsey JD, Krall RL, La Vina AG, Mellon MG, Ruttan VW., Minnesota Nat Biotechnol. 2003 Jun;21(6):599-601.

[42] WHO, description of WHO study on modern food biotechnology, human health and development http://www.who.int/foodsafety/biotech/who_study/en/

[43] Kaiser, M., http://www.ccels.cardiff.ac.uk/pubs/kaiserpaper.pdf

[44] Gesche A. et al., towards a global code of ethics for modern foods and agricultural biotechnology. In: Tavernier, J. and Aerts S., 2004. Eurosafe, 2004, Science ethics and society, p 125-128. http://www.alexander-haslberger.at/pdf/Food%20ethics.PDF

Agenda Item 5.4 GF 02/13

SECOND FAO/WHO GLOBAL FORUM OF FOOD SAFETY REGULATORS
Bangkok, Thailand, 12-14 October 2004

Prevention and Response to Intentional Contamination
(Prepared by the FAO/WHO Secretariat)

Summary

The malicious contamination of food for political, financial and other purposes is a real and current threat, and deliberate contamination of food at one location could have global public health implications. Member States of WHO have expressed concern that chemical, biological or radionuclear agents might be introduced into food and other media to deliberately to harm civilian populations and have requested the Organization to provide tools and support to increase their capacity to respond. In response, WHO has prepared various guidelines, including guidance to prevent and respond to intentional contamination of food.

While all food safety emergencies, including intentional and unintentional incidents, may be managed by the existing food safety infrastructure, sensible preventive measures coupled with basic preparedness are needed to address threats posed by deliberate contamination. Countries should integrate consideration of acts of food sabotage into existing programmes for assuring the safety of their food supplies. Strengthening of food safety infrastructure will serve to increase countries' capacity to reduce the burden of all food-borne illness caused by chemical and microbial agents and to respond to all contamination incidents. Improved linkages with existing communicable disease control systems will also ensure that surveillance, preparedness and response systems include the necessary metrics to identify food-borne outbreaks in a timely manner and provide relevant information to facilitate an effective and rapid response.

In order to respond effectively and rapidly, countries require alert, preparedness and response systems to public health threats from actual or threatened intentional contamination of the food supply. Coordination with WHO, FAO and other international and regional organizations regarding incidents involving intentional contamination should be considered as an integral part of strengthening of national systems to respond to all food safety emergencies. In particular, countries should actively participate in the WHO Food Safety Authorities Network for Emergencies (INFOSAN Emergency) as the first step establishing essential capabilities and linkages to deal with this problem.

Prevention and Response to Intentional Contamination

1. Introduction

Threats from criminals and other anti-social groups who target the safety of the food supply are already a reality. During the past two decades, WHO Member States have expressed increasing concern about the possibility that chemical and biological agents and radionuclear materials might deliberately be used to harm civilian populations. In recent years, the health ministries of several countries have increased their state of alert for intentional malevolent use of agents that may be spread through air, water or food.

In 2002, the World Health Assembly in recognizing these threats against civilian populations, requested WHO to provide tools and support to countries in strengthening their national systems to respond to the deliberate use of biological, chemical or radionuclear agents[1]. It also requested WHO to continue to issue international guidance and technical information on recommended public health measures to deal with potential incidents. In response, WHO has prepared various guidelines, including guidance to prevent and respond to intentional contamination of food.[2]

All countries must have basic systems to prevent or deter deliberate contamination of their food supplies and, if an incident occurs, to respond rapidly to minimize potential health, economic and other adverse effects of such contamination. However, specific countermeasures should be seen as only one aspect of a broader, comprehensive food safety programme, in national and global contexts. The WHO Global Food Safety Strategy[3] comprises a preventive approach to food safety, with increased surveillance and more rapid response to outbreaks of food-borne illness and chemical contamination incidents. This approach could substantially expand the abilities of countries to protect the safety of their food supplies against natural and accidental threats, while providing a framework for addressing intentional contamination of food.

For the purpose of this paper, intentional food contamination is defined as an act or threat of deliberate contamination of food for human consumption with chemical, biological or radionuclear agents for the purpose of causing injury or death to civilian populations and/or disrupting social, economic or political stability. The chemical agents in question are man-made or natural toxins, and the biological agents referred to are pathogenic microorganisms, including viruses, bacteria and parasites, that may be communicably infectious or non-infectious. Radionuclear agents are defined in this context as radioactive chemicals capable of causing injury when present at unacceptable levels. This paper covers all foods, including water used in the preparation of food, as well as bottled water.

2. Prevention

As with all health and safety problems, prevention is usually the most desirable option. Prevention is considered first line of defence against intentional contamination. The key to prevention is awareness of this potential threat and the implementation of basic security and precautionary measures. Working in cooperation with government, the food industry is in the best position to rapidly address such threats throughout the food supply system from production to consumption. Government food safety authorities may provide necessary guidance and other coordination functions to assist industry, as in the case of product tracing and recall. As production methods and quality programmes are often proprietary, the food industry has both the knowledge and the capacity to reduce the likelihood of deliberate contamination of food, from the raw materials to product distribution. Governments should support industry in strengthening existing food safety management systems, to include consideration of deliberate contamination. Governments also have a role in promoting preventive food safety, through various voluntary and regulatory mechanisms[4]. It is important to note that a number of the preventive activities described in this paper relate to 'industrialized' food production systems. Although industrialized production probably also present the most likely targets for intentional contamination, it is very likely that more traditional production systems, including systems with short distribution lines, present problems that need separate consideration.

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[1] Resolution 53.15, Fifty-fifth World Health Assembly, WHO, Geneva (18 May 2002)

[2] Terrorist Threats to Food: Guidance for Establishing and Strengthening Prevention and Response Systems, which can be downloaded at http://www.who.int/foodsafety/publications/fs_management/terrorism/en/. Copies are also available on request to the WHO Food Safety Department, CH-1211 Geneva 27, Switzerland.

[3] WHO global strategy for food safety (available in the six official languages of WHO) http://www.who.int/foodsafety/publications/general/global_strategy/en/ (2002)

[4] Assuring food safety and quality. Guidelines for strengthening a national food control systems. Food and Nutrition Paper 76, FAO on behalf of FAO/WHO, Rome (2003)

2.1 Strengthening food safety management programmes

Food can be contaminated deliberately by chemical, biological or radionuclear agents at any point in the food chain. Food safety management programmes offer opportunities for the prevention, detection and control of food sabotage. Understanding the relationships between the production system, ingredients, people, utensils, equipment and machinery can help in identifying where critical failures of the system might occur. Methods of sabotage and the extent of a threat might be identified as a part of this analysis and would provide the basis for a risk analysis. Typical food safety management programmes within the food industry, include good agricultural and manufacturing practices and 'hazard analysis and critical control point' (HACCP) systems. Newer systems based on a scientific assessment of the risk are now increasingly being used to develop risk reduction options along the food supply continuum from farm to table.

Governments should work closely with industry to incorporate prevention and response to intentional contamination into food safety management programmes. Not all countries have the infrastructure needed to assist industry, especially small and less developed businesses, to apply such programmes throughout the food production, processing and preparation continuum. Capacity building for such competence is vital for the prevention of both intentional and unintentional contamination of food. The generic actions that may be taken by governments to assist industry in this respect include:

- cooperating with industry to develop protocols for assessing the vulnerability of individual food businesses, including assessments of the facility and personnel, and potential ways in which food might be contaminated maliciously;
- ensuring that food safety is addressed and controls are coordinated at all links of the food chain, especially traceability and recall;
- cooperating with industry to strengthen the security of processes, people and products;
- providing industry with information on known or possible biological, chemical and radionuclear agents as well as specific threats;
- cooperating with industry to develop, implement, review and test crisis management plans; and
- coordinating closely with industry in communicating with the public.

Prevention of intentional contamination does not always require high technology or great expense. Increased awareness of the problem and enhanced vigilance are among the effective measures that can be taken. Awareness can be heightened by auditing food safety management programmes. In the event of an incident, information from early surveillance could be shared with the food industry to facilitate prompt action to address consumer concerns and contain and mitigate the threat.

2.2 Prevention in the food industry

The knowledge and capacity to prevent deliberate sabotage of food lies mainly with the food industry and must be applied throughout the food chain. Potential contamination with chemical and biological agents and radionuclear materials and interruption of food supplies need to be considered in the development and review of food safety management programmes, which may vary from rudimentary to well developed.

Opportunities for deliberate contamination of food can be minimized by increasing the security for both people and premises. All segments of the food industry should consider improving security and response plans for their establishments. For example, sources of raw materials and storage facilities and transport systems could be safeguarded; access to all critical areas in production, processing, transport and storage could be controlled and documented to minimize opportunities for contamination.

Regarding personnel, employers could consider screening their staff to ensure that their qualifications and background are compatible with their work and responsibilities. Sanitation, maintenance and inspection workers, who have access to critical areas, could also be screened from a security perspective. Appropriate mechanisms could be established to allow staff to report suspicious behaviour and activities.

While it is impossible to describe all the possible scenarios for food sabotage, WHO has developed basic guidance for the food industry for strengthening food safety management programmes to prevent intentional contamination of food with harmful agents[5]. This guidance offers a range of options that should be considered by industry, taking into account available resources and the perceived threat. Plausible risks need to be considered at every point in the food chain to ensure the safety of the food produced. A number of useful documents prepared by certain countries[6], [7],[8] and industries[9] offer examples and guidance for analysing risks in the production and processing of specific foods. Not all of these documents will be applicable in their entirety to smaller, developing businesses, but the general principles of assessing vulnerability apply across all businesses and sectors[10, 11]

3. Response

While preventive measures are essential, the opportunities for intentional contamination of food are just too numerous to ever be able to completely prevent such incidents. However, effective and rapid monitoring and surveillance programmes coupled with preparedness planning can do much to respond to such threats. Many governments have, or are developing, food safety infrastructures to ensure that food produced for both domestic consumption and export meets acceptable safety standards. Strengthening national food safety programmes requires that national policies and resources to support the infrastructure are in place and that food legislation, food contamination monitoring laboratories, food inspection, food-borne disease surveillance, education

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[5] Specific measures for consideration by the food industry. Appendix to *Terrorist Threats to Food: Guidance for Establishing and Strengthening Prevention and Response Systems*, Food Safety Department, WHO Geneva (2002)

[6] Notice to food processors and distributors, suggestions for improving security. Canadian Food Inspection Agency, http://www.inspection.ge.ea/english/ops/secur/protrae.shtml.

[7] Notice to food retailers, suggestions for improving security. Canadian Food Inspection Agency. http://www.inspection.gc.ca/english/ops/seeur/retdete.shtml.

[8] Notice to livestock operations, suggestions for improving security. Canadian Food Inspection Agency. hnp://www.inspection.gc.ca/english/ops/secur/livebete.shtml-

[9] Food safety and security: operational risk management systems approach (ORM). Food and Drug Administration, Center for Food Safety and Applied Nutrition, Washington, DC (November 2001)

[10] Guidance for industry, food producers, processors, transporters, and retailers: food security preventive measures guidance. Food and Drug Administration, Center for Food Safety and Applied Nutrition, Washington, DC (2002) hnp://www.efsan.fda.gov/~dms/secguid.html.

[11] Guidance for industry, importers and filers: food security preventive measures guidance. Food and Drug Administration, Center for Food Safety and Applied Nutrition, Washington, DC (2002) http://www.efsan.fda.gov/~dms/secguid2.html.

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and training are adequate and up to date. Above all, the possibility of intentional contamination needs to be an integral part of safety considerations.

While most of the knowledge and capacity to prevent food safety emergencies lies within the food industry, governments have a lead responsibility for detecting and responding to actual or threatened food contamination incidents as well as other food safety emergencies. In the event of an intentional food safety emergency, the potential consequences to public health, the economy and social or political stability must be managed by an effective, rapid emergency response system, at all levels. The effectiveness of a response depends to a great extent on preparedness plans that are developed and implemented long before any event occurs. Public health preparedness planning for emergency situations has been considered in some detail in various WHO publications and is therefore not discussed in detail in this document.[12]

3.1 *Assessing vulnerability*

The nature of a preparedness and response system is based on an assessment of specific threats of deliberate food contamination and their priorities in relation to other public health problems. The priorities are determined as part of an assessment of vulnerability performed as part of the development of preparedness plans for intentional contamination. Threats could be ranked from high to low, on the basis of their impact on health and their potential social, economic and political consequences.

Vulnerability is assessed on the basis of the prevailing scientific, economic, political and social circumstances of a country, to measure the extent of a threat and to set priorities for resources. Priorities must be set to ensure that the action taken to deal with the threat is commensurate with the severity of the inherent consequences of the threat. The purpose of an assessment of vulnerability is to identify the properties and potential consequences of deliberate contamination of food by harmful agents, to identify relative priorities and to commit national resources in a proportion consistent with these priorities. Technical experts in food and food safety should participate in any assessment of vulnerability specific for intentional contamination. Information on the toxicology of chemicals and the characteristics of microbial agents is a necessary component of such an assessment, together with an assessment of potential exposure, which will determine the potential impact of the agent.

3.2 *Preparedness as the foundation for response*

Response to emergencies caused by intentional contamination of food has common features to emergencies caused by unintentional contamination. Often the two cases cannot be distinguished, especially during the early phases of an outbreak. For these reasons, preparedness plans should include response to both intentional and unintentional incidents. Where preparedness plans already exist food safety emergencies, intentional contamination of food needs to be integrated into existing plans, making maximum use of existing emergency response infrastructure and resources. The resources and protocols for a medical response, including rapid transport, supplies, personnel and patient evacuation, are an integral part of communicable disease preparedness, and these have been described elsewhere.[13] A well-designed public health emergency response system should also include the capacity to respond to food contamination incidents. In planning for food safety emergencies, the following points are emphasized:

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[12] Health sector emergency preparedness guide, WHO (1998), http://www.who.int/disasters.

[13] Public health preparedness for biological terrorism in the USA by A.S. Khan, Morse and S. Lillibridge, Lancet, 356:1179–82 (2000)

- Planning should consider the ability of the surveillance and monitoring systems to rapidly detect food safety emergencies, including those caused deliberately;
- Investigation of a potential outbreak identified by surveillance should include identification of the food and the responsible agent in the food; and,
- Response to an incident, where the source or mode of transmission is unknown, should be made concurrently with all the necessary food safety components until the role of food can be ruled out.

For incidents involving intentional contamination of food, effective interaction between emergency response and law enforcement components is very important. Preparedness planning may include specific requirements of the criminal justice system, such as a signed chain of custody for any specimens and other evidence.

Preparedness plans should be tested in exercises involving agencies responsible for emergency responses to intentional food contamination. Any new components should be tested for effective response to intentional incidents. Evaluation of the results of real incidents and emergency response exercises should be used to identify the need for further resources, refine the roles of various agencies and their interaction and improve emergency plans.

The performance of surveillance systems for detecting food-borne disease clusters and epidemiological investigations to identify the food and hazardous agent give an indication of the capacity of the system to respond to intentional incidents. Timely response to food emergencies requires effective linkage of preparedness planning and emergency response systems in all relevant agencies. Linkages with food safety authorities are needed to provide specialized support related to an investigation that may involve food. Availability of qualified food safety inspectors and laboratories are important requirements for preparedness. For example, the timely sampling, transport and analysis of suspected foods should be addressed as part of preparedness planning. Countries need to inventory their laboratory capacities for possible threat agents. Rapid testing for unusual agents, such as dioxin and ricin, can be facilitated by international programmes, such as the Global Environment Monitoring System/Food Contamination Monitoring and Assessment Programme (GEMS/Food), which maintains a network of food safety laboratories in over 80 countries around the world.[14]

3.3 Strengthening food safety within existing public health emergency response systems

Public health preparedness and response systems focus mainly on communicable diseases, and most emergency response systems do not yet include consideration of the use of food as a vehicle for threat agents. Few countries are able to respond rapidly and effectively to intentional food contamination in their current state of development. Food safety emergency response may be initiated by either a plausible threat or an actual act of deliberate contamination of food.

An effective public health response to a deliberate food contamination incident will depend on the timeliness and quality of communication among numerous agencies and sectors, including health services, public health authorities at local and national level, clinicians, infectious disease specialists, laboratories, poison information centres, forensic pathologists, other agencies and organizations and the food industry. An effective emergency response must also be tailored to the circumstance and should include links with law enforcement and intelligence agencies, tracing and food recall systems, risk assessment specialists and the food industry as well as the more traditional sectors of health care providers, laboratories and emergency services.

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[14] http://www.who.int/foodsafety/chem/gems/en/

Linkages between existing national alert and response systems and food safety systems allow effective detection of and response to such incidents. Improved links with food safety agencies will allow access to relevant information about food and about methods and analytical techniques for testing food and harmful agents. Experts in food safety could assess the risks associated with chemicals and microbiological hazards to ensure that the response is proportional to the risk. Identification and recall of affected foods are important features of a food safety emergency response. Tracing information is necessary for estimating the scale of potential exposure and for removing the affected food from sale. It may also assist in a criminal investigation of a food contamination incident. Recalls are usually implemented by the food industry in cooperation with food safety authorities. Quarantine and customs agencies have information about food imports necessary for tracing and recall and can undertake rapid seizure of food at the point of entry. Coverage 'from farm to fork' needs to be incorporated into response planning for food safety emergencies, including the intentional contamination of the food supply.

Finally, the recovery of the food supply system needs to be considered as part of a response system. Verification of the effectiveness of the response in removing or otherwise decontaminating the food involved is necessary before relaxing restrictive measures and reassuring consumers of the safety of the food supply. While situations will vary, continued sampling and analysis will likely be a common feature of most recovery scenarios.

3.4 Communication

Swift and effective communication among all components of an emergency response system is essential and should be included in preparedness planning. Communication with international components, such as Global Outbreak Alert and Response Network (GOARN)[15] and the International Food Safety Authorities Network for Emergencies (INFOSAN Emergency)[16], should be considered essential in the light of the potential international spread of disease and trade in food. The FAO/WHO Codex Alimentarius Commission has recently provided guidance on the sharing of exchange of information during food safety emergency situations.[17] Secure web-based resources can facilitate communication during an emergency response.

Because perpetrators may sometimes seek to create panic and fear in the population, good communication with the mass media and the public is essential during a food safety emergency and should be included in preparedness planning. Timely press releases and other information should be released to the public to prevent unwarranted speculation and to forestall rumours. Food safety experts with good communication skills are valuable for this purpose. A balanced approach should provide information without unnecessarily increasing anxiety. Cultural aspects should be considered in communications about threats and incident response. An FAO/WHO publication on risk communication for food safety matters provides some guidance on this issue.[18] Suggestions for communication during outbreak situations are also available in other WHO publications.[19]

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[15] http://www.who.int/csr/outbreaknetwork/en/

[16] http://www.who.int/foodsafety/fs_management/infosan/en/

[17] ftp://ftp.fao.org/codex/reports/al27_41e_advance.pdf

[18] The application of risk communication to food standards and safety matters. Report of a joint FAO/WHO Expert Consultation. Food and Nutrition Paper 70, FAO, Rome (1999)

[19] http://www.who.int/emc-documents/tse/docs/whocdscsraph20018.pdf

An effective communication channel should be opened with the relevant food industry to share information with government authorities about intentional contamination incidents. In communicating with the public, some industry bodies have developed protocols for responding to such threats and have formulated model questions and answers for dealing with such situations.

4. Conclusions

The key to prevention of intentional contamination of food is to promote awareness of this potential threat. Working in cooperation with government, the food industry is in the best position to rapidly address such threats through implementation of basic security and precautionary measures. Government food safety authorities may provide necessary guidance and other coordination functions to assist industry, as in the case of product tracing and recall.

The emergency response to intentional contamination incidents needs to follow detailed and thoroughly tested preparedness plans. The responsibilities of lead agencies, whether they be health agencies responding to a medical emergency, law enforcement agencies responding to criminal acts or food safety authorities responding to a contaminated food, need to be clearly identified as part of the plan. Emergency response plans to food contamination threats require a high degree of cooperation among public health and law enforcement agencies of governments, as well as with the food industry. Food safety agencies can coordinate tracing and food recalls, and generally have well-established links with the food industry to effect rapid removal of unsafe food from circulation. Finally, the recovery phase following an incident should be emphasized to restore availability of safe food to the market as soon as possible. Again, a close working relationship with the food industry is necessary to reassure consumers that the incident has been resolved.

A few developed countries have taken significant steps in safeguarding their food supplies against intentional contamination. Many developing countries are only beginning to take action. However, even with the best precautions in place, no country is immune to public health emergencies caused by unsafe food considering the potential for natural, accidental and intentional contamination. With the globalization of the world's food supply, coordination of efforts internationally is increasingly seen as vital to the rapid detection of incidents, identification of causative agents and foods and the prompt and effective response to contain and mitigate any adverse health and economic effects. The management of threats to food safety in the Twenty-first Century, including intentional contamination, requires countries to maintain sensitive and rapid alert systems, detailed and well-tested preparedness plans and rapid and effective emergency response systems with links to relevant international networks.

Communication and sharing information through internationally coordinated networks will provide timely risk assessment and management. Coordination with WHO, FAO and other international and regional organizations regarding incidents involving intentional contamination should be considered as an integral part of strengthening of national systems to respond to all food safety emergencies. In particular, countries should actively participate in the INFOSAN Emergency as the first step establishing international communications and building essential capabilities to deal with this problem. WHO is now in the process of preparing a handbook for INFOSAN Emergency contact points that will provide practical guidance in preparedness and response to intentional contamination incidents.

Finally, it is important to recognize that while countries must address all plausible threats to their food production systems posed by intentional contamination, resources for more traditional food-borne disease outbreaks, including the so-called "silent epidemic" consisting of large numbers of sporadic cases, need to be maintained. These traditional outbreaks are presently causing major problems for health and development, especially in developing countries. This again emphasizes the need for ensuring that prevention and response systems in food safety be considered in a fully integrated manner, irrespective of the source of the outbreak.

APPENDIX X

LIST OF CONFERENCE ROOM DOCUMENTS

Reference	**Title**	**Origin**
4.	***Strengthening official food safety control services***	
CRD 09	Assembling effective food safety system - the official strengthening of food safety control services	Brazil
CRD 10	Sécurité sanitaire des produits alimentaires au Sénégal	Senegal
CRD 35	A generic risk management framework for administration of food safety in New Zealand	New Zealand
CRD 42	Institutional Reforms of the Canadian Food Safety System	Canada
CRD 42	Réformes institutionnelles du régime canadien de salubrité des aliments	Canada
CRD 70	Strengthening official food safety control services	USA
CRD 70	تقوية الوكالات الرسمية المعنية برقابة سلامة الأغذية	USA
CRD 70	加强政府食品安全管制服务	USA
CRD 70	Renforcer les services officiels de contrôle de la sûreté alimentaire	USA
CRD 70	Укрепление официальных служб по контролю за безопасностью продуктоа питания	USA
CRD 70	El fortalecimiento de los servicios oficiales de control de la inocuidad de los alimentos	USA
CRD 84	Food safety strategies in Europe: promoting a new approach to food control in the region	WHO
4.1	***Defining the tasks and responsibilities of different stakeholders in the framework of a national strategy***	
CRD 04	Renforcement du système national de contrôle de la sécurité sanitaire des aliments	Morocco
CRD 05	Enhancement of management of the official control system of food safety programme in Iraq	Iraq
CRD 05	تعزيز الادارات الرسمية لمراقبة سلامة الاغذية في العراق	Iraq

CRD 07	Mise en place d'un système national de contrôle de la qualité des aliments	Madagascar
CRD 11	Recent developments in consumer participation in food safety decision making at national, regional and global levels	Consumers International
CRD 12	Participación del movimiento de consumidores de América Latina y el Caribe en la Comisión Panamericana de Inocuidad de Alimentos	Consumers International
CRD 16	Defining the responsibilities and tasks of different stakeholders within the framework of a national strategy	Philippines
CRD 23	Building consensus on food safety programmes among consumers and public health organizations	SFI
CRD 24	Enhance the Monitoring System and Capability Construction to ensure the Food Safety	China
CRD 24	政府的责任和义务 —— 加强监管体系与能力建设，保障食品安全	China
CRD 25	Reforming the food safety administration in Norway	Norway
CRD 32	Developing and maintaining food safety control systems for Africa - current status and propects for change	WHO
CRD 37	Regulatory roles responsibilities and structures - issues for the future New Zealand food regulatory regime	New Zealand
CRD 40	Reorganization of consumer health protection and food safety in Germany	Germany
CRD 43	Defining the Responsibilities and Tasks of Different Stakeholders within the Framework of a National Strategy for Food Control	Canada
CRD 43	Définition des responsabilités et des tâches des différents intervenants dans le cadre d'une stratégie nationale pour le contrôle des aliments	Canada
CRD 48	El control de los alimentos en el Uruguay	Uruguay
CRD 50	Food safety control services in Liberia	Liberia
CRD 54	Strengthening official food safety control services	Thailand
CRD 57	Food control and food safety system in Korea	Korea
CRD 61	Building a food safety system in Uganda	Uganda
CRD 69	Farm-to table approach: the role of the Ministry of Agriculture and Forestry in production of fresh agricultural products for consumption	Sudan
CRD 71	Defining responsibilities and tasks of different stakeholders in the framework of a national strategy	USA

CRD 71	تحديد مسؤوليات ومهام أصحاب المصلحة المختلفين في إطار استراتيجية قومية	USA
CRD 71	界定不同利益相关者在国家战略框架内的职责与任务	USA
CRD 71	Définir les responsabilités et les tâches des différentes parties concernées dans le cadre d'une stratégie nationale	USA
CRD 71	Определение ответственности и задач, стоящих перед разыми заинтересованными сторонами, в рамках национальной стратегии	USA
CRD 71	Definición de las responsabilidades y las tareas de distintas partes interesadas, en el marco de una estrategia nacional	USA
CRD 79	Strengthening the official food safety control system in Romania	Romania
CRD 80	Strengthening official food safety control services	Malaysia
CRD 89	Strengthening official food safety control services	Bangladesh
CRD 90	Introducing Food Security Council in Indonesia	Indonesia
CRD 91	Indonesian integrated food safety system	Indonesia
CRD 95	Strengthening official food safety control services in Japan	Japan
4.2	***Legal basis for food safety official and non-official control***	
CRD 15	National food safety legislation should explicitly recognize and provide for discussion of ethical and value aspects of food safety decisions	Consumers International
CRD 17	Legal basis for food safety official and non official control	Philippines
CRD 26	Application of farm-to-table official and non official food safety control in Thailand: a case study on fresh produce	Thailand
CRD 31	Regulation on Food and Feed Control	European Commission
CRD 31	Règlement sur le contrôle des denrées alimentaires et des aliments pour animaux	European Commission
CRD 31	Reglamento sobre los controles de piensos y alimentos	European Commission
CRD 41	Official food control and legal foundation in Germany	Germany
CRD 44	Canadian Approach to a More Responsive Food Safety Control System	Canada
CRD 44	Approche canadienne d'un système de contrôle de la sécurité sanitaire des aliments plus sensible	Canada

CRD 49	The hygiene proficiency examination system in Finland	Finland
CRD 51	Indonesia's national strategy on strengthening food safety control for fresh agricultural products	Indonesia
CRD 55	ILSI Southeast Asian Region assists in harmonizing food safety standards in ASEAN	ILSI
CRD 72	Legal basis for food safety official and non official control	USA
CRD 72	الأساس القانوني للرقابة الرسمية وغير الرسمية لسلامة الأغذية	USA
CRD 72	政府与非政府食品安全管制的法律基础	USA
CRD 72	Fondement juridique aux fins de contrôle officiel et officieux de la sûreté alimentaire	USA
CRD 72	Правовая основа официального и неофициального контроля за безопасностью продуктов питания	USA
CRD 72	Base jurídica del control oficial y extra oficial de la inocuidad de los alimentos	USA
4.3	***Training of staff of official food safety control services***	
CRD 18	Training of staff of official food safety control services	Philippines
CRD 30	European Union Training Centre on Food Safety	European Commission
CRD 30	Centre de formation de l'Union européenne sur la sécurité alimentaire	European Commission
CRD 30	Centro de formación de la Unión Europea en seguridad alimentaria	European Commission
CRD 59	The training of personnel of food safety control services in France	France
CRD 59	La formation des agents de contrôle de la sécurité sanitaire des aliments en France	France
CRD 73	Training of staff of official food safety control services	USA
CRD 73	تدريب العاملين في الوكالات الرسمية المعنية برقابة سلامة الأغذية	USA
CRD 73	政府食品安全管制服务人员的培训	USA
CRD 73	Formation des effectifs dans les services de tutelle chargés du contrôle de la sûreté alimentaire	USA
CRD 73	Подготовка персонала официальных служб по контролю за безопасностью продуктов питания	USA

CRD 73	El fortalecimiento de los servicios oficiales de control de la inocuidad de los alimentos	USA
CRD 88	Training of staff for official food safety control services	Thailand
4.4	***How official services foster and enforce the implementation of HACCP by industry and trade***	
CRD 36	Proposed food control plans as the tool of choice in the New Zealand food regulatory regime	New Zealand
CRD 45	How Official Services Foster and Enforce the Implementation of Hazard Analysis Critical Control Point (HACCP) Methodology by Industry and Trade	Canada
CRD 45	Soutien des services officiels à l'application du système HACCP par les secteurs industriel et commercial	Canada
CRD 74	How official services foster and enforce the implementation of HACCP methodology by industry and trade	USA
CRD 74	كيف تعزز الوكالات الرسمية وتنفذ تطبيق الرقابة الحرجة لتحليل المخاطر من جانب التجارة والصناعة	USA
CRD 74	政府服务如何促进与确保行业和贸易实施HACCP	USA
CRD 74	De la manière dont les services de tutelle encouragent et contrôlent l'application des HACCP par les producteurs et les négociants	USA
CRD 74	Работа официальиых служб по содействию и обеспечению аиедрения HACCP а промышленности и торговле	USA
CRD 74	Cómo los servicios oficiales promueven los HACCP e imponen su aplicación a la industria y al comercio	USA
CRD 86	El fortalecimiento del sistema mexicano de protección contra riesgos a la salud	Mexico
4.5	***Import/export control and certification***	
CRD 02	Risk management approach - Imported food control - a success story	Jordan
CRD 19	Food import/export control and certification	Philippines
CRD 28	Importation of Foodstuffs into the European Union	European Commission
CRD 28	Importation des denrées alimentaires dans l'Union Européenne	European Commission
CRD 28	Importación de productos alimenticios en la Unión Europea	European Commission

CRD 38	E-Cert - Value for the regulator	New Zealand
CRD 60	Import/export control and certification in Myanmar	Myanmar
CRD 87	Food import/export control and certification	Thailand
CRD 92	Decision on the Implementation of Article 4 of the Agreement on the Application of Sanitary and Phytosanitary Measures	WTO
CRD 92	Décision sur la mise en oeuvre de l'article 4 de l'Accord sur l'application des mesures sanitaires et phytosanitaires	WTO
CRD 92	Decisión sobre la aplicación del artículo 4 del acuerdo sobre la aplicación de medidas sanitarias y fitosanitarias	WTO
5.	***Epidemio-surveillance of food-borne diseases and food safety rapid alert systems***	
CRD 62	Epidemio-surveillance of food-borne diseases and food safety rapid alert systems	Thailand
CRD 75	Epidemio-surveillance of food-borne diseases and food safety rapid alert systems	USA
CRD 75	المراقبة الوبائية للأمراض التي تنتقل عن طريق الأغذية ونظم الإنذار السريع لسلامة الأغذية	USA
CRD 75	食源疾病流行监测和食品安全快速预警系统	USA
CRD 75	Surveillance épidémiologique des maladies à vecteur alimentaire et systèmes d'alerte rapide aux fins de sûreté alimentaire	USA
CRD 75	Эпидемиологический надзор за передаваемыми с пищей заболеваниями, а также системы оперативного предупреждения в сфере безопасности продуктов питания	USA
CRD 75	La vigilancia epidemiológica de las enfermedades transmitidas por los alimentos y los sistemas de alerta rápida en la inocuidad de los alimentos	USA
5.1	***Food contamination monitoring and food-borne disease surveillance at national level***	
CRD 06	Enhancing surveillance of food-borne diseases in Australia	Australia
CRD 20	Food contamination monitoring anf food-borne disease surveillance at national level	Philippines
CRD 27	Epidemio-surveillance of food-borne diseases and food safety rapid alert systems	China
CRD 39	New Zealand total diet survey	New Zealand

CRD 46	Health Canada Food Safety Programme: Surveillance Strategies	Canada
CRD 46	Programme de sécurité sanitaire des aliments du Canada: Stratégies de surveillance	Canada
CRD 58	Food-borne disease surveillance system in Korea	Korea
CRD 63	Food contamination monitoring and food-borne disease surveillance at national level	Thailand
CRD 76	Food contamination monitoring and food-borne disease surveillance at national level	USA
CRD 76	متابعة تلوث الأغذية ورقابة الأمراض التي تنتقل عن طريق الأغذية على المستوى القومي	USA
CRD 76	国家一级的食品污染监测与食源疾病监控	USA
CRD 76	Surveillance de la contamination alimentaire et veille à l'échelon national sur les maladies transmises par la nourriture	USA
CRD 76	Мониторинг заражения продуктов питания и надзор за передающимися с пищей заболеваниями на национальном уровне	USA
CRD 76	Vigilancia de la contaminación de los alimentos y seguimiento de las enfermedades transmitidas por los alimentos en el ámbito nacional	USA
CRD 81	Food-borne disease surveillance at the national level: a Malaysian perspective	Malaysia
CRD 82	Notification of zoonotic diseases/infections in human, animals, food and feed	Sweden
CRD 83	Salmonellosis	Sweden
CRD 96	Food-borne disease surveillance in Japan	Japan
5.2	***International cooperation on food contamination monitoring and food-borne disease surveillance***	
CRD 08	Emerging chemical and microbiological issues - Importance of surveillance and international cooperation and information sharing	Australia
CRD 29	Rapid Alert System for Food and Feed (RASFF) in the European Union and its possible Worldwide Extension	European Commission
CRD 29	Le système d'alerte rapide pour les denrées alimentaires et les aliments pour animaux (RASFF) dans l'Union européenne et son éventuelle extension au monde entier	European Commission
CRD 29	Sistema de alerta rápida para alimentos y piensos (RASFF) en la Unión Europea y su posible ampliación a escala mundial	European Commission

CRD 33	Activities of the WHO global *Salm*-Surv: Asian regional center	WHO
CRD 56	WHO global Salm-Surv: a worldwide capacity building programme for the surveillance of *Salmonella* and other food-borne pathogens	WHO
CRD 64	International cooperation on food contamination monitoring and food-borne disease surveillance	Thailand
CRD 66	International cooperation on food contamination monitoring and food-borne disease surveillance. - A case study in the AMRO Region	INPPAZ
CRD 66	Cooperación internacional para el monitoreo de la contaminación de alimentos y la vigilancia de enfermedades transmitidas por alimentos. - Estudio de caso en la Región AMOR	INPPAZ
CRD 67	Inauguration of the International Food Safety Authorities Network (INFOSAN)	WHO
CRD 85	Role of WHO surveillance programme for control of food-borne infections and intoxications in Europe	WHO
5.3	***Dealing with emerging risks related to the environment and new technologies***	
CRD 13	Consumer organization experiences with GM Foods in some countries in Africa	Consumers International
CRD 14	National capacity elements required to ensure the safety of GMOs and GM Foods	Consumers International
CRD 22	Activities of the Joint FAO/IAEA Division of nuclear techniques in food and agriculture related to food safety	FAO/IAEA
CRD 34	Preparedness for nuclear emergencies affecting agriculture	FAO/IAEA
CRD 52	La sécurité sanitaire des aliments	Mauritania
CRD 53	Le contrôle phytosanitaire en Mauritanie	Mauritania
CRD 77	Dealing with emerging risks related to the environment and new techologies	USA
CRD 77	التعامل مع المخاطر الناشئة المتعلقة بالبيئة والتكنولوجيات الجديدة	USA
CRD 77	应对与环境和新技术有关的新风险	USA
CRD 77	Pallier les risques émergents dans le domaine de l'environnement et des technologies nouvelles	USA
CRD 77	Борьба с новыми факторами риска, относящимися к окружающей среде и новым технологиям	USA
CRD 77	Cómo hacer frente a los riesgos emergentes sobre el medio ambiente y las nuevas tecnologías	USA

5.4 Prevention and response to intentional contamination

CRD 21	Prevention and response to intentional contamination	Philippines
CRD 47	Prevention and response to intentional contamination	Canada
CRD 47	Prévention et réaction en cas de contamination intentionnelle	Canada
CRD 65	Prevention and response to intentional contamination	Thailand
CRD 78	Prevention and response to intentional contamination	USA
CRD 78	منع التلوث العمدي والاستجابة في حالة حدوثه	USA
CRD 78	预防及应对有意图的污染	USA
CRD 78	Prévention et intervention en cas de contamination intentionnelle	USA
CRD 78	Предотвращение преднамеренного заражения и реагирование на него	USA
CRD 78	Prevención y respuesta a la contaminación deliberada	USA

Other related issues

CRD 03	The International Portal for Food Safety, Animal and Plant Health (IPFSAPH)	FA0
CRD 68	European research in food safety	European Commission
CRD 93	The Five Keys for Safe Food: WHO's community food safety activities	WHO
CRD 94	Standards and Trade Development Facility	SDTF

APPENDIX XI

SUMMARIES OF GF-2 SIDE EVENTS

FAO/IAEA/WHO Seminar on the Use of Irradiation for Sanitary and Phytosanitary Purposes

A Joint FAO/IAEA/WHO Seminar on the Use of Irradiation for Sanitary and Phytosanitary Purposes was attended by over 30 participants from 11 IAEA Member States. Presentations were made on the Achievements of the International Consultative Group on Food Irradiation (A. Lustre), Use of Irradiation for Sanitary Purposes (T. Rubio-Cabello), Safety of Irradiated Food (G. Moy) and Current and Future International Organization Activities on the Use of Irradiation (D. Byron). The Seminar proposed that further assistance should be given through the various existing mechanisms to train analysts in the detection of irradiated foods and in the communication of risk to relevant parties.

INFOSAN

Dr Jorgen Schlundt, Director of the WHO Food Safety Department presented an overview of the International Food Safety Authorities Network (INFOSAN), which was inaugurated at GF-2. The network also includes a mechanism for the rapid exchange of information during food safety emergencies (referred to as INFOSAN Emergency). INFOSAN, which is operated in cooperation with FAO, was launched at the last WHO World Health Assembly in May 2004 and responds to requests from the assembly for WHO to facilitate communication during emergencies caused by natural, accidental and intentional contamination of food. In particular, INFOSAN Emergency also responds to a request from Codex member countries for WHO to maintain a list of official contact points for emergency situations involving health and safety of consumers.

Five Keys to Safer Food

Dr Jorgen Schlundt introduced WHO's Five Keys to Safer Food training materials, highlighting the importance of keeping food safety education messages simple. In recognition of the need for adaptation of the core messages of the Five Keys to local or specific situations, it was reported that WHO had developed a training manual to facilitate this adaptation. WHO Regional Advisors presented the materials developed based on the five keys, including mass media spots, games, posters, interactive websites, and targeted posters, some of which are particularly geared toward children, rural populations or food service establishments. The presenters also noted the inclusion of a scheme to evaluate the effectiveness of the training programme. It was noted that WHO was in the process of testing the training materials and the manual in a number of countries in various regions of the world.

International Portal on Food Safety, Animal and Plant Health

A presentation and live demonstration of the International Portal on Food Safety, Animal and Plant Health was given by the FAO Secretariat. The design and use of the portal, as well as the benefits for member countries of inputting their relevant national information in the portal were outlined. Delegates were directed to an on-line survey which will provide FAO with feedback on the information management needs of countries, as well as providing a means for countries to indicate their interest in collaboration in the portal. An information paper on the portal is available as CRD 3.

FAO Food Safety Capacity Building Needs Assessment

Dr Ezzeddine Boutrif presented an FAO Food Safety Capacity Building Needs Assessment tool, which had been prepared in cooperation with WHO and would be available in December 2004. The reasons for assessing capacity building needs, the steps in the capacity building process, and the target audience and design of the manual were outlined. The speaker noted that the tool contained a general section on capacity building needs and five modules addressing needs in five major area related to food safety, as well as a number of supporting tools and templates to supplement the needs assessment process. It was mentioned that the tool would be peer reviewed and tested in various regions of the world in the upcoming months.

FAO/WHO Training Package to Enhance National Participation in the Work of Codex

The FAO Secretariat presented an FAO/WHO Training Package to Enhance National Participation in the Work of Codex, which was currently being peer reviewed and finalized. The speaker outlined the contents of the package, including information on the organization and working procedures of the Codex Alimentarius Commission and its subsidiary bodies, guidance on establishing effective national Codex programmes, and practical examples from member countries. It was noted that the package was organized into modules and slide presentations, which enabled the use of the materials in seminars and training courses.

Consumers International: "Consumer Concerns – Food Safety and GMOs"

Consumers International (CI) organized a side event on "Consumer Concerns – Food Safety and GMOs" on 14 October 2004 immediately following the closing ceremony of GF-2. The objectives of the event were to inform participants of the consumer concerns with regards to food safety and GMOs, to identify and create contacts with country representatives of importance to the CI GMO campaign, and to increase the profile of the consumer movement and its involvement in this issue. The event was chaired by Dr Sri Ram Khanna, Managing Trustee of VOICE, India and included presentations by Dr Suman Sahai (Gene Campaign, India), Dr Michael Hansen (Consumers Union, USA) and Dr Vitoon Lianchamroon (Biothai, Thailand). The event was conceptualized and managed by Bejon Misra, CEO VOICE with local support from the Thai Consumer Organizations. The complete report of the event, including conclusions, is available from www.consumer-voice.org.

Food Safety Road Map: Handling the associated trade opportunities and conflicts

The Thailand National Bureau of Agricultural Commodity and Food Standards, in collaboration with the Thailand National Food Institute, convened a seminar on Food Safety Road Map: Handling the associated trade opportunities and conflicts on Friday, 15 October 2004 at the Emerald City Hotel in Bangkok. Presentations were made by Messrs. Hartwig de Haen, Kraisid Tontisirin and Ezzeddine Boutrif of FAO; Dr Apichart Pongsrihadulchai of the Thailand National Bureau of Agricultural Commodity and Food Standards; Dr Bob Brackett of the United States Food and Drug Administration; Dr Patrick Deboyser of the delegation of the European Commission to Thailand; and Dr Kazumi Ueno, project manager of the Japan International Cooperation Agency (JICA) study team on "Food Safety System". A panel discussion was held on the "Break through crisis of Thai agricultural and food commodities under the policy of Thailand food safety year 2004: private sector's perspective", which was moderated by a representative of the Thailand National Food Institute.

International Symposium on "In Search of a Better and More Effective Food Safety System: Thailand Towards the Kitchen of the World"

The Symposium was organized by the Faculty of Allied Health Sciences, Chulalongkorn University in cooperation with WHO and provided the first opportunity for a national discussion on the outcome of GF-2. Dr Gerald Moy, GEMS/Food Manager, WHO Food Safety Department presented a paper on the current global food safety situation. Dr Suwit Wibulpolprasert provided comments on the safety of the food supply from chemical hazard. A number of speakers addressed the situation in Thailand in the context of food quality, GMP and HACCP. Professor Jongjit Angkatavanich led a panel of experts to explore the possible structure of the food safety system in Thailand in the future. Mr Alan Reilly of the Food Safety Authority of Ireland spoke on his experience with the single agency model.

The Second Global Forum of Food Safety Regulators, jointly convened by the Food and Agriculture Organization of the United Nations and the World Health Organization, took place from 12 to 14 October 2004 in Bangkok, at the kind invitation of the Government of the Kingdom of Thailand. Approximately 400 delegates from 90 member countries and observers from 10 international governmental and non-governmental organizations participated to exchange information and experiences on the theme "Building effective food safety systems". A total of 13 working documents were presented and discussed in plenary sessions on two subthemes – "Strengthening official food safety control services" and "Epidemio-surveillance of food-borne diseases and food safety rapid alert systems". In addition, over 100 conference room documents were prepared by the participating countries and organizations covering the various topics of the forum. Side events were also held on specific matters of interest to the forum.

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